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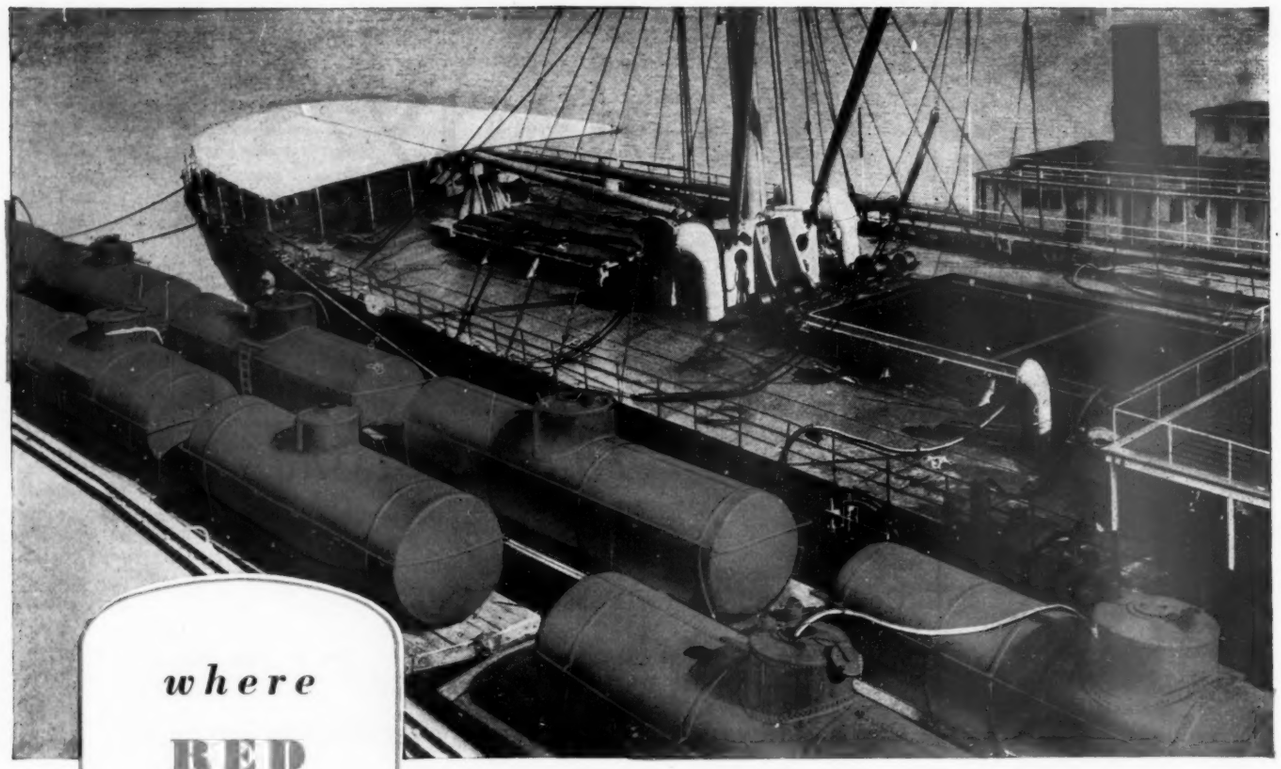

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Railway Age

Vol. 89, No. 6 August 9, 1930

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Secretary Hurley on Inland Waterways

SECRETARY of War Patrick J. Hurley on January 8 last, in reply to certain questions that were submitted to him by the *Railway Age*, wrote a letter to this paper in which he said: "I may assure you that the War Department has no intention of inviting controversial discussion as to the relative merits of various forms of transportation." Yet Secretary Hurley on July 21 broadcasted an address on inland waterways in which he said: "The waterways will perform a special service which is fundamental in assuring minimum cost of transportation. * * * The money saved as a result of water transportation will be an addition to the farmer's income. * * * The waterways penetrating the interior of the country, by lowering transportation costs on raw materials and finished products, will widely extend the areas suitable for the location of industry. * * * Development of water transportation and the consequent industrial opportunities will increase railroad transportation."

A Question for Secretary Hurley

In making, on July 21, the statements quoted from his address, and numerous others that were similar, Secretary Hurley departed widely from the policy of the War department, as stated in his letter to the *Railway Age* on January 8, for each of the statements made by him which are above quoted is highly controversial as respects the merits of inland water and rail transportation. Waterway advocates claim, and railway spokesmen deny, that improved rivers and canals assure "minimum cost of transportation". Waterway advocates claim, and railway spokesmen deny, that improved rivers and canals will cause savings that will be added to the farmer's income. Waterway advocates claim, and railway spokesmen deny, that "the waterways penetrating the interior of the country" will lower transportation costs on raw materials and finished products. Waterway advocates claim, and railway spokesmen deny, that development of water transportation will "increase railroad transportation."

Now that Secretary Hurley, as head of the War department, has "invited controversial discussion", the *Railway Age* submits to him again a question which it submitted to him in a letter dated December 19, and which is embodied in the following paragraph in italics:

"It is claimed that improvement of rivers and construction of canals will lower transportation costs. *What is meant: (a) that the rates charged for carriage by waterway alone will be lower than the total rail charges on the same traffic, or (b) that total waterway costs—including not only rates for carriage, but interest upon the investment in waterways and costs of maintaining them—will be lower than the corresponding rail rates?"*

"Nature", said Secretary Hurley in his address on July 21, "has provided our nation with far-reaching waterways." If nature has provided them, why is it necessary for man to spend hundreds of millions of dollars upon them? The only intimation in Secretary Hurley's address that it is necessary to spend any money upon them at all was a reference to the river and harbor bill recently passed by Congress. He said that the development of waterways will result in reductions of freight rates. He did not say that it will also result in an increase of taxes.

What Is "Economic Justification?"

Of course, Secretary Hurley knows that rivers cannot be improved and canals built without spending large amounts of money which must be raised by taxation. Does he belong to that school of statesmen who believe in the Santa Claus theory of government—the theory that whatever the public pays for does not cost anybody anything? He asserted that the Inland Waterways Corporation, which operates the government-owned barge line on the Mississippi river system, is "now self-supporting". The Inland Waterways Corporation has never in any year earned interest upon the investment in its boats and other facilities. The public is paying that interest in taxes. Of course, Secretary Hurley knows this. Plainly, therefore, when he says that the Inland Waterways Corporation is "now self-supporting" he must mean that what the public pays for in taxes does not cost anybody anything.

Secretary Hurley said that the waterway policy of the present administration includes "the improvement and modernization of our waterways in aid of our farms and industries wherever economic justification

can be shown." The most significant fact regarding the discussion of waterways is the persistent use by spokesmen of the government of such phrases as "economic justification", "cheapening of transportation" and "cost of water transportation" and their equally persistent refusal to say what they mean by these phrases. Is it necessary to "economic justification" to show merely that the improvement of any particular waterway will result in a reduction of freight rates, or is it necessary also to show that it will result in a reduction of freight charges exceeding the increase in taxes that will be caused? Will Secretary Hurley or any other spokesman of the government answer that question and throw light on what is meant by "economic justification"?

As long as Secretary Hurley and other spokesmen of the government refuse to answer such questions the natural inference will be that they are afraid to answer them. As long as they seem afraid to answer them the inference may be drawn that their program of waterway development has not an economic, but a political purpose.

Effect of Waterways on Rail Traffic

The most exasperating statements which constantly emanate from the waterway spokesmen are those in which they give the assurance that their policy will not hurt the railways, but, to use Secretary Hurley's phrase, "will increase railroad transportation". There is no warrant in experience or reason for this assurance. Some government spokesmen have pointed out that during the last five years the tonnage moved by the Illinois Central and the Yazoo & Mississippi Valley, which parallel the Mississippi river, has increased 9 per cent, and have implied that this shows that an increase in water traffic causes an increase in rail traffic. They have failed to state, however, that during the same years the tonnage carried by the railways of the entire Southern district increased 11 per cent and that the tonnage carried by the railways of the United States increased 12 per cent.

In no other part of the country has the development of river transport been carried farther than in the Pittsburgh district. In the case involving the construction of branches of the Pittsburgh, Lisbon & Western railroad (I. C. C. 150, p. 43) the Baltimore & Ohio introduced a significant statistical exhibit. This showed that in the twenty years from 1907 to 1927 the railroad tonnage of the Pittsburgh district increased only 4 per cent, while its waterway tonnage increased 179 per cent. During the same years the total tonnage transported by the railways of the United States increased 40 per cent. In other words, while waterway advocates claim that the development of water traffic will increase rail traffic, the facts show that in the Pittsburgh district, where there was a phenomenal increase in water traffic, the increase in rail traffic was only one-tenth as great relatively as in the entire country. Every intelligent person knows that the increase of traffic handled via the Panama canal has resulted in a heavy loss of freight business to the railways. There is not a fact in the history of the United States to support the view that an increase in traffic on inland waterways will cause an increase in traffic by rail.

The arguments in support of the development of rivers and canals are the most unfounded and fallacious that have been presented to the people of the United States upon any economic question since William J. Bryan presented his arguments for free silver a third of a century ago. There is a certain pleasure in answering them because they are so easily refuted. It seems, however, to do very little good to answer them. A movement that has the backing of such a combination of business men and politicians as the waterway movement has is not easily influenced by facts and reason.

Retirement of Mr. Woodlock

THE retirement of Thomas F. Woodlock as a member of the Interstate Commerce Commission is an important and significant event, and one which will be regarded with regret by all who desire government regulation under which the railways can prosper and render good service.

When Mr. Woodlock was appointed by President Coolidge he probably had a better understanding of railway conditions and railway economics, and a more sympathetic attitude toward the railroads, than any other man ever appointed to the commission. It is not difficult to surmise the reason for his voluntary retirement. It probably is that after six years of experience and hard and intelligent effort he decided that he could accomplish little as a member of the commission. Newspaper reports indicate that he will resume his connection with the Wall Street Journal. His future writings on railway problems and government regulation should be unusually illuminating.

The retirement of Mr. Woodlock emphasizes the fact that the commission has passed almost completely under the domination of Commissioner Eastman. Mr. Eastman is an honest man and one of unusual industry, ability and perseverance. He is, however, an advocate of government ownership of public utilities and railroads; and the policy of regulation favored by him reflects his somewhat socialistic views. He repudiates the principles of valuation and fair return laid down by the Supreme court of the United States. He believes that a fair valuation is one based upon the number of dollars invested, less a large deduction for depreciation, and that a fair return is the smallest return on which the commission believes the railways will be able to continue to function.

Mr. Woodlock, on the other hand, accepts the view of the Supreme court that a fair valuation is a determination of the present value of property, and that a fair return is not merely a return which will barely

enable the railways to function, but one which will not be confiscatory under decisions of the Supreme court and as compared with the returns earned in other kinds of business. It is too early yet to say what are the views of some of the new members of the commission. Developments have shown, however, that a majority of the commissioners have accepted Mr. Eastman's principles and are determined to give them effect. This left Mr. Woodlock in a hopeless minority. He could and did write one able dissenting opinion after another, but his arguments had little effect upon the policy of the commission, and he evidently concluded that he would find work in private life more agreeable and more worth while.

His retirement is so significant because it removes from public life almost the only man prominently connected with the government at Washington who has seemed disposed to do anything to help the railroads excepting occasionally praise them for rendering good service. Such praise is almost valueless when those who give it join heartily with those who withhold it in doing about all they can to reduce the rates of railways that sorely need larger earnings and in subsidizing competition that diverts traffic from them. The probable benefits to the railways of the advances in class rates recently authorized have been greatly exaggerated in inspired statements from Washington. The reductions of grain rates ordered may do the western lines much more harm than estimates thus far made have indicated, while the increasing competition from government-aided means of transportation constitutes a serious menace to all railways. It seems anomalous that, under a Republican administration which believes in private enterprise and is seeking to restore and increase the prosperity of other industries, regulation of railways should be dominated by a member of the Interstate Commerce Commission whose government ownership views are well-known and the prolonged application of whose principles of regulation must make railroad prosperity impossible.

It is to be hoped, now that Mr. Woodlock has become a private citizen, that he will comment fully and frankly both upon railway management and railway regulation. With the railways failing, even in a year such as 1929, to earn anything approaching a fair return, and earning in 1930, in spite of constantly increasing retrenchments, relatively the poorest net return since 1921, the situation existing in years of both good and poor business is one that demands complete ventilation. It begins to look as if nothing less than another breakdown of railway service will be sufficient to bring home to farmers, business men and government authorities a realization of the fact that such treatment as the railways are being given is a serious menace, not only to their welfare, but to that of the nation. At the present time the railways are rendering the best service in their history, and incurring a good deal of unnecessary operating expense in doing so, and at the same time are sharply reducing their maintenance expenditures. In January they reduced their total maintenace expenditures almost $8,000,000; in February about $7,000,000; in March, almost $13,000,000; in April more than $16,000,000, and in May almost $23,000,000.

Good service and inadequate maintenance are incompatible, and if the decline in expenditures for maintenance continues to go on at an accelerating rate an adverse effect upon service will inevitably begin to be felt. Not a few railways are not earning their fixed charges, much less anything for dividends. It may be said that the railways are merely suffering with other industries. When business is good we are always told that the railways are not entitled to earn as large profits as other industries, and when business is poor we are always told that they are merely suffering with other industries. Such statements will not prevent deterioration of service if the railways long continue unable adequately to maintain their properties.

These facts are plain to Mr. Woodlock. They do not seem to be plain to the business men and public men who constantly say that the nation cannot get along without good railway service but who, at the same time, constantly exert themselves to make the continued rendering of such service impossible. There is great need for more such men as Mr. Woodlock in government service; but it is useless to expect them to stay in such service when all their efforts to secure the adoption of sound government policies prove futile.

The Need for a National Association of Car Men

EVEN at a time like the present when railroad associations and their activities are under the closest observation in the interests of economy, it may be said without fear of successful contradiction that there is a definite field and necessity for a national association of car department supervisors, possibly a section of the American Railway Association, to supplement the work of the Mechanical division. The achievements of the Mechanical division are well known and its contribution to successful railroading, in the past year's work alone, can hardly be overestimated. In recent years, however, its work has become increasingly technical and legislative in character, leaving little opportunity for considering many of the problems which daily confront car foremen and supervisors and, in the aggregate, have such an important bearing on efficient railway operation. Prominent members of the division have said both publicly and in private that there is a great need for a national association of car department supervisors who can get together once a year and not only recommend changes in interchange rules to the parent association, but make helpful suggestions for the betterment of car department conditions and railway operation in general.

Such an association is already in existence in the form of the Master Car Builders' & Supervisors' Asso-

ciation, which will hold its second annual convention, August 26 to 28, inclusive, at the Book-Cadillac hotel, Detroit, Mich. Regarding this association, the *Railway Age* has no hesitation in saying it will prove a constructive force for better railroading, providing its development is guided along the lines planned by its present officers and board of directors. The association, in itself an amalgamation of two former groups of car men, is the only national body with membership limited strictly to representative railway car department officers and supervisors. This membership of specialists will bring a wide experience and a national viewpoint to the consideration of general car-department and car-shop problems, as well as of interchange and loading rules, and may be made to supplement effectively the work of the Mechanical Division of the American Railway Association.

At the annual meeting of the Master Car Builders' & Supervisors' Association last fall, the membership was approximately 1,600 and, since that time, there has been a net gain of about 200 more representative car department officers and supervisors. With active and able leadership and reasonable care not to duplicate the work of other associations, it may safely be said that this association will prove a valuable agency in carrying on educational work among car-department forces and, hence, deserves the hearty support of the higher railway officers.

Making Coach Travel Attractive

RECENT months have witnessed intensive efforts on the part of many railroads to increase the attractiveness of passenger coach travel and thus secure a larger proportion of the passenger traffic which, for one reason or another, does not desire to use Pullman accommodations. Improved modern coaches, closely approaching chair-car equipment from the point of view of attractive decoration and furnishings, have been placed in service. Bucket-type seats with individual reclining backs and, in some cases, designed to rotate, contribute greatly to the comfort of passenger coach travel as well as to the ability of passengers to see and enjoy the scenery. Thermostatic heat control is an established success and air cooling may not be so far away. At least one railroad in the middle west is also providing radio news and entertainment features in coaches by loud speaker extensions from the radio set in the lounge car.

In conjunction with the provision of all these material comforts and embellishments, it is important that trainmen display a more attentive and considerate attitude toward non-Pullman passengers than is at present encountered in some instances. A business man recently went back to the dining car from his seat in one of these modern railroad coaches, neglecting to take his seat check. The train conductor insisted that he should return to the coach immediately, interrupting his meal, in order to get the check, and displayed considerable irritation when persistent objections were advanced. A Pullman passenger across the way in the dining car, however, was permitted to go unchallenged when inquiry revealed that he also had failed to bring the stub of his Pullman seat reservation ticket with him. Presumably, the train conductor was simply following instructions in the case of the coach passenger, but it is somewhat difficult to understand why he was so strict with one passenger and so lenient with the other.

What Can We Learn From European Practices?

WIDE variations in environment gave rise to the development of marked differences in organization, physical characteristics and practices of the railways of America and Europe as they spread their networks of tracks over the two continents. American railway officers have for this reason been inclined to look upon facts concerning European practices as matters of passing interest, rather than as a fund of knowledge from which useful lessons might be drawn. There are, of course, exceptions to this rule. In the field of timber preservation and tie conservation much has been learned from European methods, and with the more intensive development of American railways has come the realization that conditions surrounding our own operations are gradually approximating those prevailing abroad.

The primary distinction between American and European conditions, to which reference has been made so frequently as a reason for a fundamental difference in policy, may be expressed briefly as expensive labor and cheap material here and cheap labor and expensive material there. This distinction still prevails in so far as it concerns labor, but is gradually being eliminated with respect to materials. Never in the history of American railways has there been such a concerted effort to conserve the materials that go into their construction and maintenance, and in the discussions to this end frequent references are now being made to measures for economy that are in vogue in Europe.

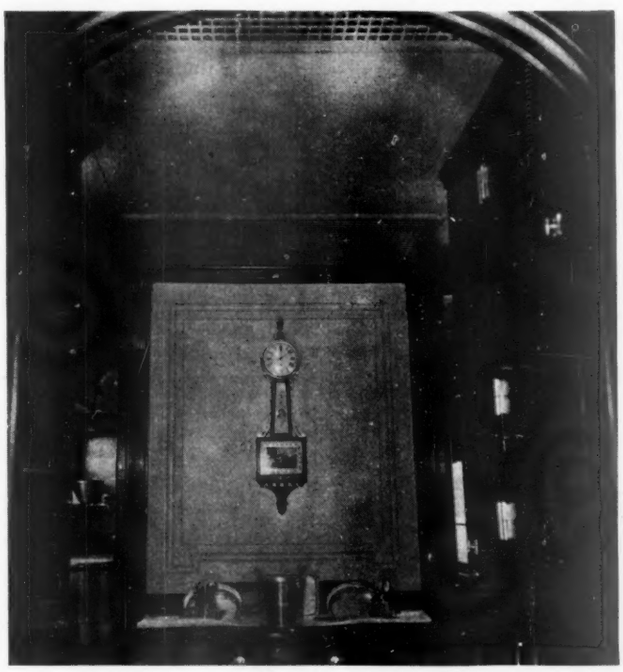
While, therefore, it is to be expected that American railways will continue to take the lead in the adoption and use of labor-saving appliances, it is to be expected also that they will learn much from the European railways with respect to economy in the use of materials. It is to be presumed that American railway officers who attended the International Railway Congress in Spain availed themselves fully of their opportunities to observe European railway practices. It is to be hoped that the results of their observations will become available in reports and papers that will receive wide distribution.

Interior of Car Showing Louvered Openings in Half Decks Through Which the Conditioned Air is Delivered

Conditioned Air for Passenger Cars

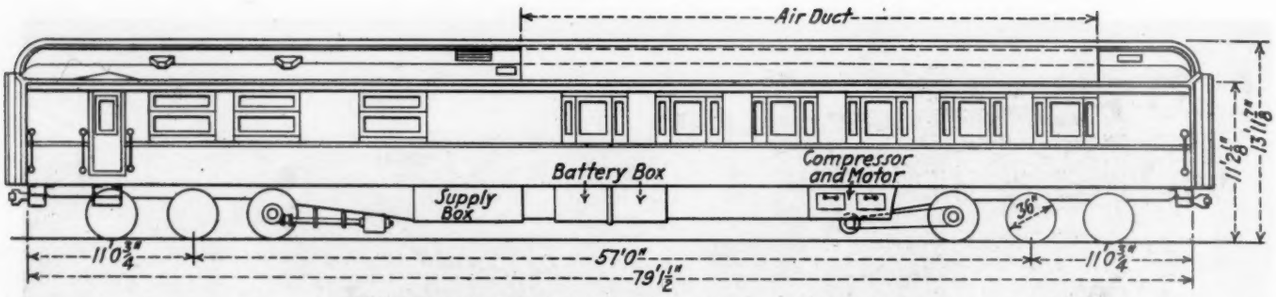
Baltimore & Ohio equips diner "Martha Washington" with apparatus which controls temperature and humidity of air and excludes dust, soot and cinders

AIR conditioning has been applied to the Baltimore & Ohio diner "Martha Washington" and the car is now in regular service as a part of the Columbian between Washington, D. C., and New York. The equipment as used on the car is the result of testing and design work that has been carried on during the past year. The Baltimore & Ohio in conjunction with the Carrier Engineering Corporation, Newark, N. J., in July, 1929, equipped a Baltimore & Ohio coach for complete air conditioning. The equipment was applied about the first of July and the tests made during the hot summer weather indicated that comfortable conditions could be maintained within cars, whether fully or partially occupied by passengers, under the worst conditions of temperature and humidity which are likely to prevail.



Recirculating Intakes are Located in the Ceiling at One End of the Car

Following these successful experiments made in 1929 with the coach, the Baltimore & Ohio decided to equip one of its Colonial dining cars with air conditioning equipment of a similar nature, but differing in certain respects in order to reduce weight and space requirements. Specially designed apparatus was installed on the dining car "Martha Washington." On April 14, 1930, a test run was made in a regular Baltimore & Ohio train from Baltimore, Md., to Cumberland, Md. The full winter heating capacity of the car was turned on, intensified by heat from the kitchen and the already



Side Elevation of Car Showing Location of Equipment

warm outdoor weather. When the air conditioning system was set in operation to counteract these effects, the temperature was reduced from 93 deg. to 70 deg. in 20 minutes. It was also shown that the temperature could be made considerably lower than this, if desired.

The test was made by Col. Geo. H. Emerson, chief of motive power and equipment, Baltimore & Ohio; J. H. Davis, chief engineer of electric traction, Baltimore & Ohio; O. M. Ragsdale, standard products department, Carrier Engineering Corporation; Richard Arf, mechanical engineer, Carrier Engineering Corporation, and other representatives of both companies. As a result of the test it was decided to place the car in regular service in which it has since proved highly satisfactory and a decision has now been reached to equip more cars with similar apparatus.

General Description

The air conditioning equipment is designed to free the air in the dining compartment of the car from dust, soot, cinders and other foreign matter and to control the temperature and humidity within certain limits.

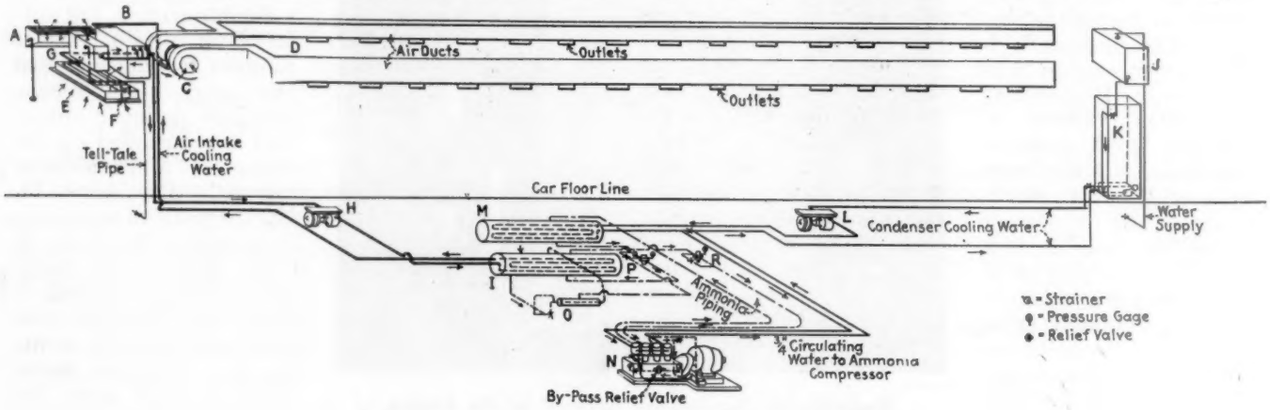
Mechanical air filters of commercial type filled with steel wool and enclosed in suitable sheet steel housings are applied on each side of the car, as shown at *A* in the diagram, at the roof line at the pantry end. Fresh air required in the car is drawn through these filters where cinders, dust and other foreign matter are arrested. The air then passes over cooling coils *B* where its temperature is reduced as desired and where excess humidity is condensed from the air. Thence it is handled by motor driven fans *C* for distribution through insulated ducts *D* on the roof of the car and from which point it is delivered to the interior of the car through the louvered openings in the half deck. In order to prevent drafts, adjustable perforated openings are provided above the louvers in the half deck which are set so as to give an equal distribution of air throughout the car.

As the temperature in the dining compartment of the car reaches a predetermined point, say 10 or 15 deg. below the outside temperature, the recirculated air which is normally flowing through air recirculating intake *E* and thence over the cooling coils *B*, is closed by the compressed air temperature regulator *F* thus preventing further cooling of the recirculated air. Through a mechanical interlock, when the temperature regulator *F* closes the louvers or moving vanes of the air recirculating intake at *E* the louvers or moving vanes *E'* are opened, thus permitting the recirculation of air within the car without passing over cooling coils *B*. As the temperature of the air within the car tends to rise above a predetermined point, temperature regulator *F* opens louver *E* and closes *E'* and thus provides for cooling the air again. This automatic temperature regulation can be set as required and will function on a difference of three to five deg. F.

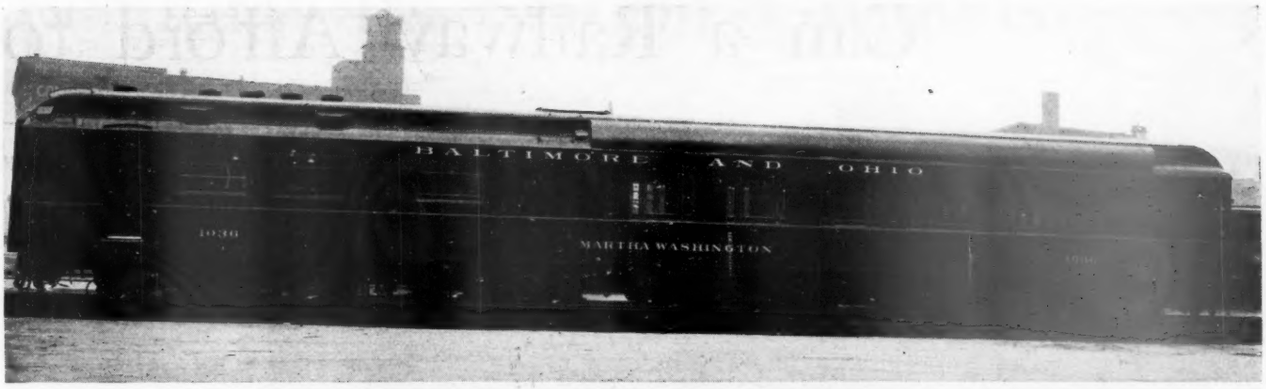
Refrigeration

Refrigeration is accomplished by means of a 7½ hp. motor-driven ammonia compressor mounted beneath the car floor. After compression, the hot ammonia gas (or other suitable refrigerant) is delivered to ammonia condenser *M*. Within this tank or condenser are small pipe coils through which water is circulating. The ammonia gas is condensed to liquid ammonia and is then passed through an expansion valve *P*, after which it is delivered to the evaporator *I*. Within the evaporator or tank *I* are pipe coils through which water is circulated. After the ammonia passes through evaporator *I* and the water within the pipe coils is cooled, the ammonia is returned through the back pressure valve *R* to the suction side of the compressor *N* where it is available for re-use.

The hot compressed ammonia gas at high pressure is delivered to the ammonia condenser *M*. By means of water circulated within the coils of this condenser *M* gas is condensed to a liquid. This imparts heat to the water. By means of the motor driven pump *L* this water is circulated, as indicated by arrows, to the cooling tower *K*, which is located at other end of car oppo-



Schematic Diagram of Apparatus, Ducts and Piping



The Enclosure on the Roof Houses the Air Ducts

site from the kitchen. Here the water is picked up and sprayed by a motor-driven pump and outside air is drawn into this water spray by means of a fan mounted on the same vertical shaft with the motor and pump. Thus the warm water from the condenser is cooled to approximately the wet bulb temperature of the outside air. During this process more or less of the condenser water is lost by evaporation. To make up for this loss the water supply tank *J*, located overhead in the car, supplies make-up water through the piping connection and automatic float control valve in cooling tower *K*. At intervals, for instance division points, the supply of water is replenished. A maximum loss of 10 to 12 gal. per hour may be experienced under extreme conditions of operation. Thus it will be seen that the condenser water is made available for re-use and the only make-up water required is that needed to replace evaporation.

The water used for cooling the air is chilled in the evaporator tank *I*. Due to the expansion of the ammonia through this tank, temperature of the water in the pipe coils of the tank is reduced and by means of motor-driven pump *H* the chilled water is delivered from the evaporator *I* to the cooling coils *B* and thence back to the pump and the evaporator as indicated by the arrows. There, of course, is no loss of water in this operation but due to the condensation brought about by the cooling of the air as it passes over the cold water pipe coils, more or less water is produced which is disposed of through a waste pipe. It is by this means that moisture is removed from the incoming air and the humidity controlled.

Through thermo control *O* provision is made to prevent the temperature of the evaporator from going below a certain pre-determined point usually around 38 deg. F. and thus freezing of the cooling coils and evaporator is avoided. This thermo control functions automatically through back pressure valve *R* so as to close off the return of ammonia to the compressor. As the motor-driven compressor continues to rotate, the local circulation between the discharge and suction of the compressor continues through the by-pass valve as indicated on the compressor *N*. If for any reason the pressure on the discharge side of the compressor should rise beyond a pre-determined point, a safety switch of the diaphragm and electric type is provided on the compressor so that the operation of the motor will be discontinued by the opening of a relay in the electric control circuit.

Power Supply

Electric power for the operation of the air conditioning plant and for supplying the lights in the car is provided by a gear-driven 10-kw. 110-volt direct current generator and a 4-kw. 40-volt belt-driven generator. A storage battery used in connection with the 40-volt generator has a capacity of 600 amp. hr. This will be replaced by another having a capacity of 864 amp. hr. and the 4-kw. belt-driven generator will be replaced by a 5-kw. gear-driven unit. Provision is also made for receiving power from a wayside connection when the car is in the yards or is standing for an extended period at a station.

The 110-volt power is used to operate three motors, i.e., the 7½ hp. compressor motor, the 1 hp. motor on the cooling tower and the ¾ hp. motor driving the condenser pump. The 40-volt generator supplies power for lights, fans, the ¾ hp. cold water circulating pump and the ½ hp. motor driving the two fans which circulate the conditioned air.

The cold water pump can be started and stopped independently and the speed of the fan motors can be regulated manually to meet variable conditions. The cold water system has a capacity of about 40 gal., which is in effect the equivalent of a certain amount of storage battery capacity. When the car is standing or running at a speed below the cut-in speed of the generators and the compressor is not working, the cold water and air circulating pumps operate from the storage battery and continue to condition the air until the compressor again goes into operation.

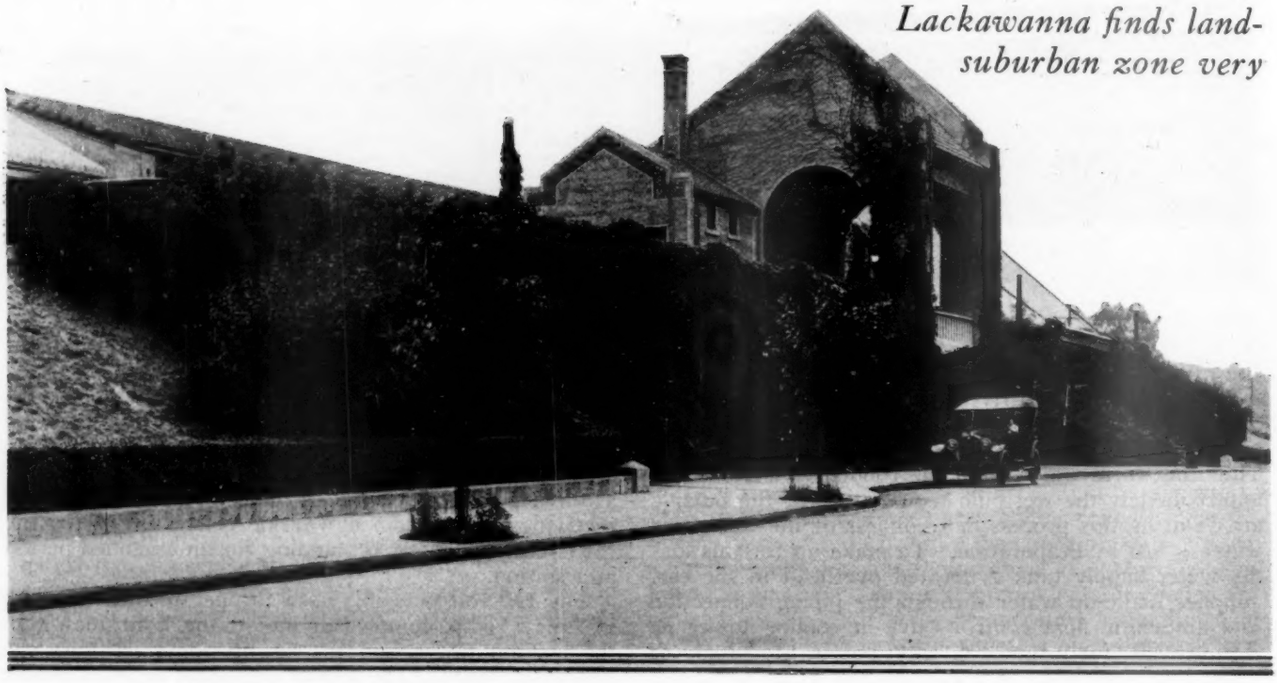
The air conditioning equipment was applied to this car at the Mt. Clare shops of the Baltimore & Ohio and all work done by the Baltimore & Ohio forces. The Carrier Engineering Corporation furnished an engineer to supervise the installation of the equipment on the car. The car has been in regular commercial service since April 23, 1930.

* * *

Along the Pennsylvania

Can a Railway Afford to

Lackawanna finds land-
suburban zone very



Boston Ivy Has Been Used Most Effectively in Softening the Walls and Lines of the Station at Bloomfield, N. J.

PERHAPS the best example of a definite and successfully conducted policy of station grounds beautification to be found in this country is the Delaware, Lackawanna & Western. Evidence of this is afforded at practically all of its stations in the New York suburban zone in northern New Jersey. Within this territory in particular, following a policy started as far back as 1900, the Lackawanna has made its station grounds the pride of every town and the object of commendation of commuters and through passengers. Year after year its stations and station grounds have belied the common impression that railroad station facilities must of necessity be drab and unattractive, and have disproved the theory that vegetation cannot be made to thrive in the atmosphere immediately adjacent to a steam railway line. They have also demonstrated that exceptional results can be accomplished with a relatively small outlay of money and with a correspondingly small force of men.

Station Buildings are Attractive

The attractiveness of the station facilities of the Lackawanna in the New York suburban zone can be attributed to two factors; the station buildings themselves, and the landscaping of the station grounds. To the specifications that a station building must be adapted physically to local requirements and of first class construction, has been added the further qualification that it must be architecturally pleasing and in harmony with the most progressive policy of the community in which it is located. No attempt has been made to standardize on color, shape, materials or design; in fact, a definite effort has been made to get away from standardization, and, therefore, every station has an individuality of its own. At the same time, the most careful thought and attention are given in each instance to the harmonious blending of all of these factors so that each station will present the best possible appearance.

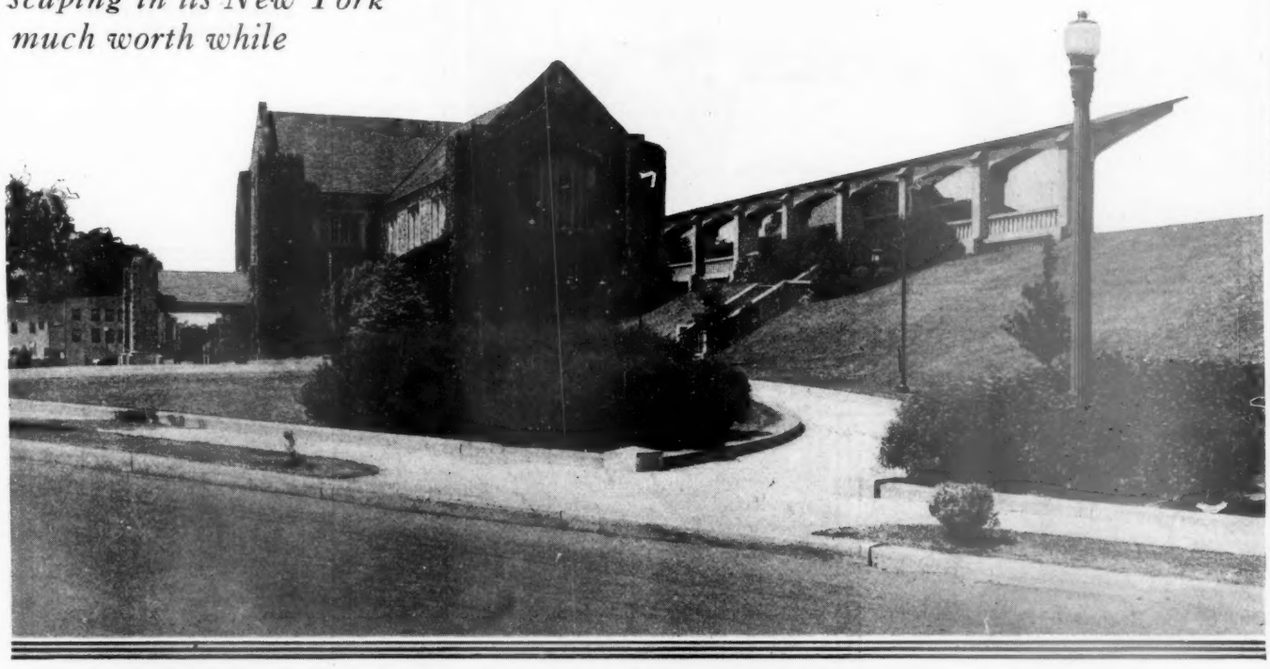
Following this policy, some of the stations are constructed of an attractive face brick and ornamented with stone; others are of stucco, and a few are of natural stone obtained in the vicinity. Slate and colorful tile roofs are frequently employed to give richness to the stations, and walks, platforms, balustrades and embankment walls are invariably of concrete, which not only gives the appearance of massiveness and permanence, but also forms a pleasing contrast in color with the lawns and foliage about the station grounds.

Veritable Parks Provided at Some Stations

Attractive as most of the station buildings are, their appearance is largely dependent upon the setting and the landscaping of the adjoining grounds, which, after all, is the outstanding feature of the Lackawanna's stations in the New York suburban zone. Depending upon the size of the station grounds, the landscaped plots range from narrow strips in front of some of the stations to veritable parks about others, with spacious lawns, shrubbery beds, nooks, terraced gardens and rockeries. The predominating species of plant life used about the stations include deciduous shrubbery and trees, which are brilliant with foliage in the summer, but which lose it in the winter; conifer evergreens, including the spruce, hemlock and loblolly pine, which are green the year around; and the evergreen shrubs, such as rhododendrons, mountain laurel and some of the azaleas, which likewise retain their foliage through the winter months. In addition to the trees and shrubs, Virginia creeper, English ivy and honeysuckle vines are used around and over rocks, low walls and stone piles, either to add grace to an already pleasing formation or structure, or to beautify a spot which might

Beautify Its Station Grounds

scaping in its New York
much worth while



A Section of the Well-Landscaped Station Grounds at Madison, N. J.

otherwise disfigure the landscape. Extensive use is also made of Boston ivy, the clinging type, which has been found most effective in softening the lines and plainness of building and walls.

Effective as is the plant life in itself as a beautifier, the unusually pleasing results secured on the Lackawanna are due in large measure to the way in which it is used. Every station grounds and, in fact, every plot, is a study in itself. In the first place, the greatest care is given in the designing and laying out of each plot or bed so that it will have the proper proportions and shape, and so that it will suitably fill the space available. In addition, the greatest care is exercised in the selection of plants and shrubs for each assembly to insure a harmonious blend of colors, in both blooms and in foliage, and so that each group will have a beauty of form and arrangement in winter as well as in summer.

Landscaping Work Started About 1900

Dressing up the station grounds of the communities in the vicinity of New York is not new with the Lackawanna, because as early as 1900 a definite program of station ground improvement was put under way. Until 1915, however, the work was handled largely by maintenance section forces, and because of the large initial expense involved at many stations and the lack of experienced supervision on the part of the road, little headway was made toward the condition as it exists today, although, each year hundreds of trees and shrubs, and from 25,000 to 30,000 annual plants were put into the ground. In those days the Lackawanna maintained a large greenhouse at Dover, N. J., where plants were held over the winter and where thousands of annuals were started. Each spring a special florist train was made up at Dover and was loaded with the entire stock of the greenhouse for distribution over the system. At each station a predetermined quantity of plants were set off and turned over to the local section foreman for planting.

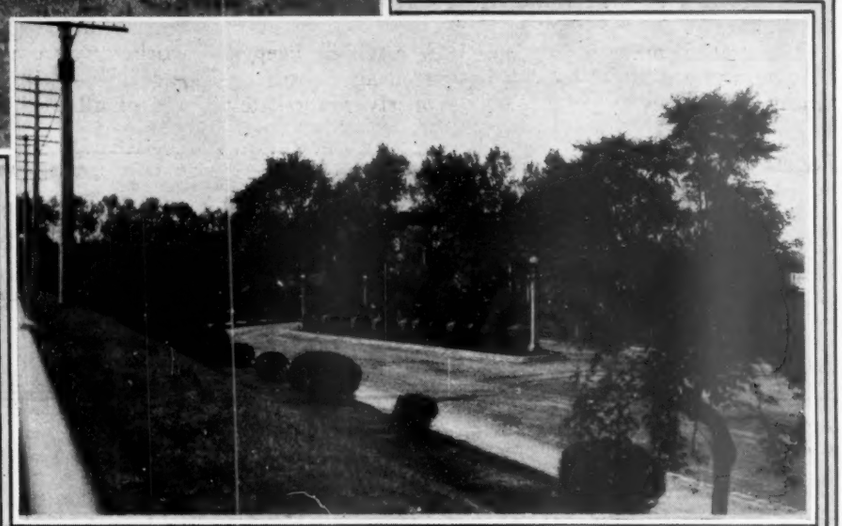
In 1915 a definite gardening organization was established and placed under the supervision of a general gardener skilled in nursery work, and soon the station grounds began to take on a new and better-kept appearance. Plantings continued year after year in accordance with a carefully worked out plan for each individual station, and while waiting for young shrubs and perennial plants to obtain their normal size in order to fill the spaces they were intended to beautify, from 15,000 to 20,000 annuals and hot-house plants were used each year to fill in and beautify the grounds. As the shrubs and other perennials established themselves, however, the yearly plantings of annuals gradually decreased, and in 1925 their use was practically discontinued. Now, except at one or two of the newer stations, it is only a problem of maintaining well-established grounds, and the beauty of each station site continues from year to year with relatively little expense other than that required for proper maintenance.

Attractive Grounds at New Paterson Station

Many examples of well-designed plantings of equal interest could be cited on the Lackawanna, but for lack of space, one alone is included herewith in detail. This planting is at Paterson, N. J., and is selected because it is one of the most recent to be completed.

An examination of the Paterson station, which was put in service last year, and of its adjoining grounds, shows many features typical of other stations on the Lackawanna. In the first place, the station buildings and platforms are neat and trim in appearance; a high retaining wall necessary to retain the hillside carrying

Trained Men Do the Gardening Work



One of the Beautifully Landscaped Approaches to the Station at Chatham

the tracks is constructed of concrete and so designed as to make a distinct contribution to the appearance of the station site; terraces are seeded and shrubbed; and unused areas are subdivided into graceful plots and skillfully landscaped. The accompanying sketch shows the general character of the north side of the station grounds at Paterson, and by reference numbers, the character of the plantings made. Altogether, there are 3,047 trees, plants and shrubs on the station grounds.

Small Force Handles Work Effectively

Beautifying the station grounds on the Lackawanna has not been accomplished without difficulties, because with steam operation of its trains and the deteriorating effect of smoke, soot and gases on plant life immediately adjacent to the tracks, some difficulty has been encountered in securing the best of plant foliage. In addition, it has been necessary in the past to haul hundreds of yards of top soil to various station grounds in order to establish and maintain plants and shrubs, and to spread fertilizer frequently at many points to keep the soil in a suitable condition.

All of this work, together with seasonal planting, the mowing of lawns, and the trimming and pruning of shrubs and hedges, has been carried out by a force of 20 men or less, working under the direction of a general gardener and his assistant. With the exception of three men who are assigned as caretakers to three of the larger stations, the entire gardening force is on a floating basis, and the men travel from station to station in groups, using regular passenger trains, to carry out the work necessary at each point.

During the months of April and May, the work of the gardening force includes a general cleaning up of the station grounds, the mowing of lawns, and such additional planting as may have been planned. During the summer and fall the work consists principally of general caretaking, which includes the mowing of lawns, the spading up of flower beds, the trimming of hedges and watering. In the winter months, three or four of the men are dropped from the force and the other men are employed in trimming and pruning trees and shrubs and in keeping the station ground walks and platforms free from snow.

The outlay of equipment used by the gardening force is relatively small, considering the varying character of the work done and the large territory which is covered. This equipment consists mainly of lawn mowers, wood and iron rakes, an insect sprayer, pruning shears, spades, shovels, picks and hoes, and a considerable quantity of ¾-in. rubber hose for watering the grounds. One of the most recent additions to the equipment is a power hedge trimmer, which has been found most effective in this work, and which can trim as fast as five or six men with hand shears. All of this equipment is transported from place to place in the baggage cars of the trains used by the men.

Practically all of the plants and shrubs used on the Lackawanna for replacements from year to year, and in extending its station gardening program, are purchased directly from nurseries. A small company nursery of about 1½ acres is maintained at Convent, N. J., but this is used primarily for storing or heeling-in any excess plants awaiting distribution.

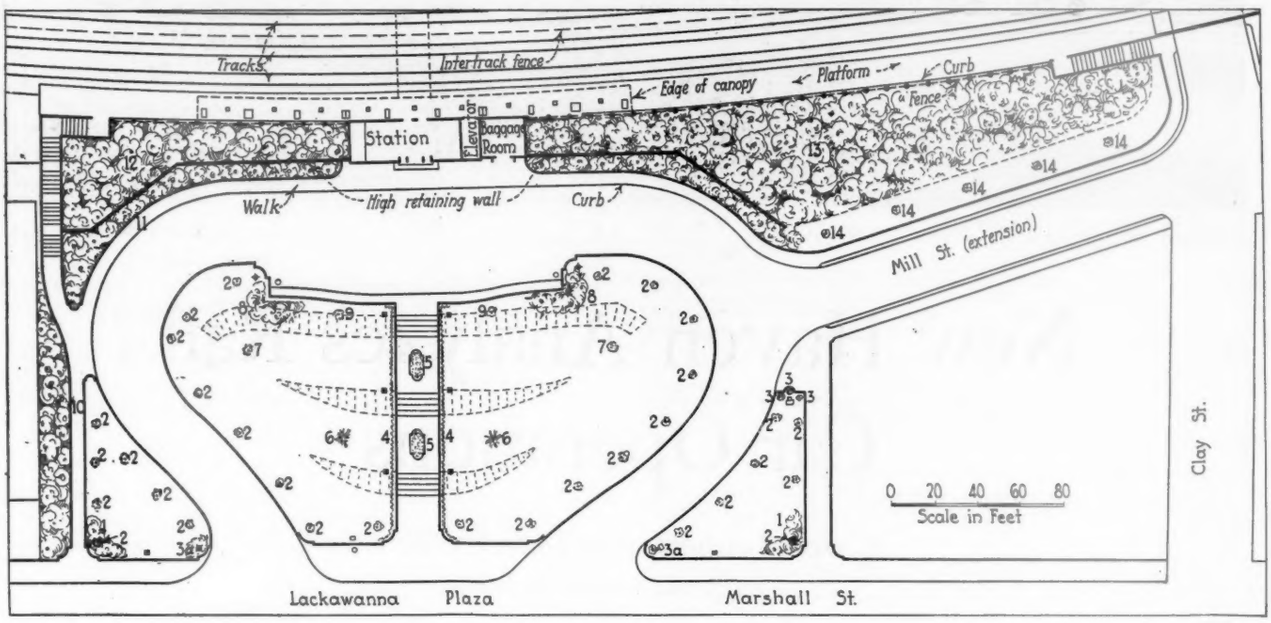
Practice Has Beneficial Results

The question of the value of giving so much attention to its station grounds in the New York suburban

zone is readily answered by the Lackawanna. In the first place, it feels under some obligation to make a contribution to the communities which it serves, most of which are primarily residential in character. It is convinced that its attractive station grounds are appreciated by its patrons and the towns along its lines, and that they are a boon to the railroad and the towns in that they advertise both as catering to home owners and a generally high-class of people. Just what proportion of the Lackawanna's largely increased commuter traffic in the last 15 years can be attributed to its well-kept station grounds is necessarily a matter of conjecture, but it is felt that the favorable influence created by its station grounds is considerable, and more than sufficient to justify the additional expenditure involved.

The Lackawanna is not only interested in keeping its own grounds attractive, but has encouraged the beautification of private and public property immediately adjoining its station grounds. The most recent step in this regard was taken during the early part of October of last year, when, in co-operation with one of the local nurseries on its lines, it inaugurated a garden and landscape bureau in connection with the flower shop in its passenger terminal at Hoboken, N. J. At this bureau, horticultural experts furnish patrons of the road, without charge, advice concerning plants, shrubs and trees, and the most effective way to landscape yards and estates.

Credit for the notable results which have been made in beautifying the Lackawanna's station grounds is due to a number who have taken a keen interest in this work, but in particular to Geo. J. Ray, chief engineer, and A. J. Neafie, principal assistant engineer, both horticulturists of some note, who have directed the work for a number of years. C. R. Peterson, general gardener, is in direct charge of the gardening force and of all of the work done.



A Sketch Plan of the Plantings Made at Paterson, with Reference Numbers

1 Hydrangea arborescens grandiflora—Snow Hill Hydrangea
Spiraea—Anthony Waterer—Waterer Spirea
2 Ligustrum ovalifolium—California Privet
3 Yucca filamentosa—Adams Needle
3 A Berberis thunbergi—Japanese Barberry
4 Buxus sempervirens—10-12 in.—Box (Bush form)
5 Buxus sempervirens—1½ ft.—(Bush form)
Rosa Polyantha Eblouissant—Red Roses
Rosa Polyantha Marie Pavic—White Roses
Rose Polyantha Gruss-an-Hacken—Yellow Roses
6 Tsuga canadensis—Canada Hemlock
7 Morus alba pendula—Tea's Weeping Mulberry
8 Hydrangea paniculata grandiflora—Panicle Hydrangea—(Cone Shape)
Berberis atropurpurea—Redleaf Japanese Barberry
9 Acer atropurpureum—Purple Leaf Japanese Maple
10 Juniperus virginiana—Redcedar
Rhododendron maximum—Rosebay Rhododendron
Rhododendron carolinianum—Carolina Rhododendron
Kalmia latifolia—Mountain Laurel
Andromeda floribunda—Mountain Andromeda
Mahonia aquifolium—Oregon Holly Grape
Ilex crenata microphylla—Small Leaf Japanese Holly
Azalea henodegiri—Red Japanese Azalea
Ampelopsis tricuspidata (veitchi)—Japanese Creeper
11 Ampelopsis tricuspidata (veitchi)—Japanese Creeper
Thuja occidentalis pyramidalis—Pyramidal Arborvitae
Thuja occidentalis compacta—Parsons Dwarf Arborvitae
Thuja occidentalis lutea—Geo. Peabody Arborvitae
Thuja occidentalis wareana (sibirica)—Siberian Arborvitae
Thuja orientalis (Biota)—Oriental Arborvitae
Thuja orientalis (Biota) elegantissima—Yellow Column Arborvitae
Thuja orientalis (Biota) nana aurea—Berckman Golden Arborvitae
Cryptomeria lobbi compacta—Cave Cryptomeria
Juniperus virginiana—Redcedar
Juniperus virginiana elegantissima—Goldtip Redcedar
Juniperus virginiana glauca—Silver Redcedar
Juniperus tamariscifolia—Spreading Redcedar
Juniperus chinensis pfitzeriana—Pfitzer Juniper
Retinosporo squarrosa veitchi—Veitch Moss Cypress
Retinosporo obtusa gracilis—Slender Hinoki Cypress
Retinosporo obtusa crippsi—Cripps Golden Cypress
Retinosporo filifera—Thread Cypress
Retinosporo filifera aurea—Golden Thread Cypress
Retinosporo plumosa—Plume Cypress
Retinosporo plumosa aurea—Golden Plume Cypress
Retinosporo pisifera aurea—Golden Sawara Cypress
Taxus baccata erecta—English Yew
Taxus cuspidata—Japanese Yew
Taxus cuspidata nana (brevifolia)—Dwarf Japanese Yew
Pinus cembra—Swiss Stone Pine
Mahonia aquifolium—Oregon Holly Grape
Ilex crenata microphylla—Small Leaf Japanese Holly
Azalea hinodegiri—Red Japanese Azalea
12 Ampelopsis tricuspidata (veitchi)—Japanese Creeper
Ligustrum ovalifolium—California Privet
Berberis thunbergi—Japanese Barberry
Spiraea van houttei—Van Houttei Spirea
Spiraea Anthony Waterer—Waterer Spirea
Hydrangea arborescens grandiflora—Snow Hill Hydrangea
13 Ligustrum ovalifolium—California Privet
Spiraea van houttei—Van Houttei Spirea
Spiraea Anthony Waterer—Waterer Spirea
Hydrangea arborescens grandiflora—Snow Hill Hydrangea
Weigela rosea—Pink Weigela
Forsythia suspensa—Weeping Golden Bell
Symphoricarpos racemosus—Snowberry
Symphoricarpos vulgaris—Coralberry
Berberis thunbergi—Japanese Barberry
Ampelopsis tricuspidata (veitchi)—Japanese Creeper
14 Acer platanoides—Norway Maple
15 Ampelopsis tricuspidata (veitchi)—Japanese Creeper
Symphoricarpos racemosus—Snowberry
Symphoricarpos vulgaris—Coralberry
16 Ligustrum ovalifolium—California Privet
17 Picea excelsa—Norway Spruce

One of the Latest Types of New Haven Rail Motor Cars

New Haven Analyzes Rail Car Operations

Careful supervision found to be a requirement for success

IN 1922, the New York, New Haven & Hartford began the substitution of rail motor cars for steam locomotives and coaches. In addition to being one of the first railways to experiment along these lines, the New Haven, by reason of its unusually large branch line mileage, has been an excellent proving ground, first, for the experiment, and later, after the experimental stage was passed, under actual operating conditions.

At this time, the New Haven has released 36 steam locomotives and 72 wooden coaches by means of its rail motor cars. Aside from all other considerations, this represents a large saving in operating expenses. Experience and cost studies based thereon have shown the New Haven management that the substitution of rail motor cars for steam service results in a saving in operating charges of approximately 50 per cent. That is to say, the studies have shown that the rail motor cars are operated at about one-half the out-of-pocket cost per mile of the steam service, excluding such factors as, for example, fixed charges.

A great many other benefits of a somewhat less tangible but nonetheless valuable nature, also accrue. hTere is the additional safety provided by the substitution of the steel rail motor cars for the wooden coaches. Further, the locomotives supplanted were of the old, small type, which if continued in the service, would nave required heavy expenditures for repair or replacement by a more modern type of power.

Rail Motor Car Assignment

The New Haven now owns 36 rail motor cars, of which 24 have mechanical and 12 gas-electric drive. The mechanical-drive cars are of the older types and the development in the manufacture of rail motor cars has been so rapid that, after eight years, some of the first cars are now practically obsolete.

From the very first, the New Haven has conducted traffic studies to indicate where the rail motor cars would be of the most value, and has assigned the cars to runs selected from such studies. In general, the cars are assigned to service on the branch lines, and, in some cases, where the traffic is such as to permit, to commuter service in the middle of the day.

The development of the motor coach service by the subsidiary New England Transportation Company has been followed closely. The gas-electric cars are assigned principally to a class of service intermediate between highway and steam service; where the highway coaches are either unable to accommodate the volume of traffic where the mail and express traffic is too heavy,

or where the roads are not suitable for motor coach operation. In other words, the rail motor cars provide an important link between the highway service, on the one hand, and the steam service on the other.

Under the latest assignment, the rail motor cars make an average of 2,760 miles daily, 28 cars being kept in service to protect these runs. The remaining 8 cars provide for a shopping margin, and are also used as spares upon other occasions. These spares have been assigned to the places where emergencies are most likely to arise, being stored at various strategic points throughout the system.

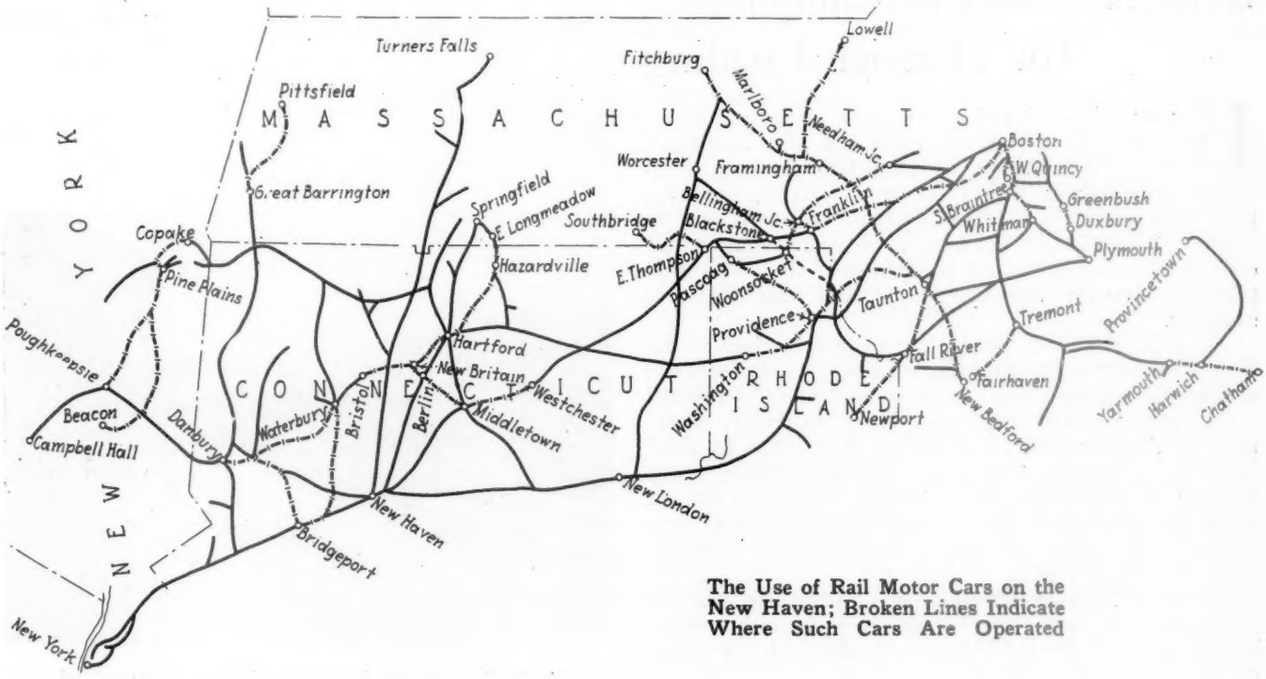
As previously stated, some of the first cars purchased are now practically obsolete, being used only in cases of emergency, or for some miscellaneous service. Hence, their mileage per day is quite low. The average miles per day of the rail motor cars in revenue service, excluding stored and unserviceable cars, is 81 miles for the mechanical-drive cars, and 122 miles for the gas-electrics, the daily average for all types of rail motor cars being 98.5.

In view of the relatively short runs on the New Haven, this daily average mileage portrays the ingenuity with which these cars are assigned. As a general rule, the rail motor car operation covers the north and south service, and intersects the heavily traveled main line at many points. The map shows the extent of coverage of rail motor cars on the New Haven. It should not be overlooked, of course, in studying this map, that, in many cases, steam passenger service is also operated over the lines where rail motor cars are used.

The assignment of the cars is as follows:

Daily Runs	Mileage Trip	Mileage Daily
Pine Plains to Copake	14	
Copake to Poughkeepsie (1 round trip)	81	
Copake to Pine Plains	14	
		109
Fairhaven to Tremont (2 round trips)		60
Pine Plains to Beacon (1 round trip)		89
Woonsocket to Bellingham Jct. (1 round trip)	13	
Woonsocket to Bellingham Jct.	6	
Bellingham Jct. to Needham Jct. (2 round trips)	74	
Bellingham Jct. to Woonsocket	6	
		99
Danbury to Bridgeport (1 round trip)		58
Great Barrington to Pittsfield (1 round trip)		51
Lowell to Taunton (1 round trip)		122
Chatham to Yarmouth (1 round trip)	32	
Chatham to Harwich (1 round trip)	15	
		47
Danbury to Waterbury (1 round trip)		62
Fitchburg to Framingham	37	
Framingham to Marlboro	10	
Marlboro to Fitchburg	30	
		77
Southbridge to East Thompson (2 round trips)		68
Taunton to Lowell (1 round trip)		122
Providence to Pascoag (2 round trips)		90
Franklin to Bellingham Jct.	5	
Bellingham Jct. to Needham Jct.	18	
Needham Jct. to Franklin	23	
		46
New Britain to Berlin (22 round trips)		108
Fall River to Newport	20	
Newport to Taunton (3½ round trips)	186	
Taunton to Fall River	14	
		220
Franklin to Boston (1 round trip)		55
Framingham to Marlboro (6 round trips)		118
South Braintree to Boston	11	
Boston to West Quincy (4 round trips)	69	
Boston to South Braintree	11	
South Braintree to Whitman (1 round trip)	19	
		110
Greenbush to Duxbury (3 round trips)		60
New Bedford to Providence (1 round trip)		85
New Bedford to Providence	43	
Providence to Taunton	23	
Taunton to New Bedford	20	
		86
Bridgeport to Waterbury (2 round trips)		128
Middletown to Berlin (6 round trips)	113	
Middletown to Westchester (1 round trip)	31	
Middletown to Berlin (4 round trips)	75	
		218
Washington to Providence	14	
Providence to Blackstone (2 round trips)	70	
Providence to Washington (1½ round trips)	43	
		127
Hartford to East Longmeadow (1 round trip)	45	
Hartford to Bristol (1 round trip)	36	
Hartford to Hazardville (1 round trip)	33	
		114

It will be noted that this covers a wide variety of service, some of the cars merely shuttling back and



The Use of Rail Motor Cars on the New Haven; Broken Lines Indicate Where Such Cars Are Operated

forth between the same two points, while others wander considerably farther afield. All of the movements were, however, arrived at only after a careful study of the needs of the locality served. The mileage of each car, too, fluctuates widely, from as high as 220 miles a day to as low as 46 miles a day. This fluctuation also is governed by the local needs, although, of course, every effort is made to increase the utilization of these cars, consistent with the demands of the service.

New Cars Authorized

In the past, no trailers have been handled by the rail motor cars on the New Haven, except in cases where the power unit also handles a mail car or a milk car. However, again after careful study of its needs, the New Haven management has determined that, on this railroad, there is a considerable field for rail motor cars sufficiently powerful to handle one, two or three trailers, and authority has been issued for the purchase of additional cars having sufficient capacity to handle trailers. These cars are for use in places where the survey has determined that the traffic is not heavy enough to require steam service, but where, at certain times of the day, more capacity is needed than that afforded by a single rail motor car.

These cars will be placed in the service, as received from the builders in accordance with a definite plan which has already been worked out. The New Haven did not simply order the cars and then wait until they were delivered to see if they could use them to advantage. On the contrary, a reasonably close estimate of the savings to be made was available before the authority to purchase the cars was requested. A definite assignment for each of these cars has already been worked out, and will be followed as the cars are received. By means of this advance preparation, the New Haven will be able to place these cars, as received, in the exact service where they will do the most good, and avoid the period of trial and error in assignment before the maximum benefits can be obtained.

Blotters Issued in Campaign for Heavier Loading

IN connection with the campaign being conducted by the Car Service Division of the American Railway Association to stimulate heavier loading of freight cars, it has prepared a blotter carrying the message "Help Reduce Transportation Waste by Loading Cars to the Load Limit," with the thought that considerable benefit would be derived if they were distributed through railway agents and employees to shippers.

An illustration on the blotter calls attention to the difference between the marked capacity of a car and the amount of tonnage that can be loaded in it. "We are stressing this distinction," says M. J. Gormley, chairman of the Car Service Division, in a letter to chief operating officers, "as we have frequently found that a number of officers as well as many employees do not know the difference. In fact, at a recent meeting there was a traffic officer of one of the roads that did not know the difference."

The Car Service Division is prepared to furnish the blotters in two sizes for distribution, either bearing the name of the individual railroads, or in the name of the Car Service Division.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended July 26 amounted to 919,349 cars, a decrease of nearly 9,000 cars as compared with the week before. As compared with the corresponding week of last year the decrease was 183,204 cars, and as compared with 1928 it was 114,977 cars. All classes of commodities showed reductions as compared with last year, although grain and grain products showed an increase as compared with 1928, and all districts showed reductions as compared with both years. Miscellaneous loading showed a decrease of 73,842 cars as compared with last year. The summary, as compiled by the Car Service Division of the A.R.A., follows:

Revenue Freight Car Loading

Week Ended Saturday, July 26, 1930

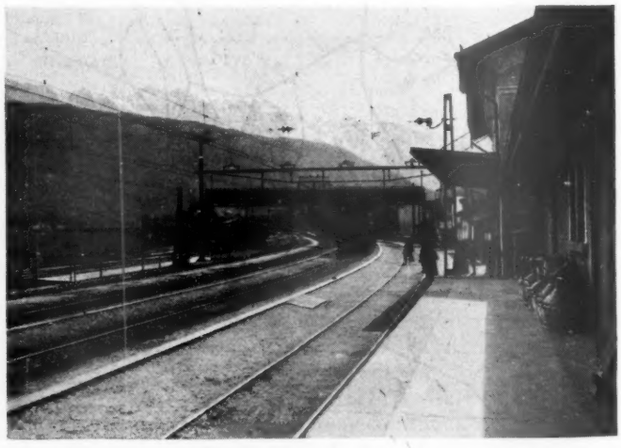
Districts	1930	1929	1928
Eastern	204,485	248,590	234,045
Allegheny	183,277	225,746	208,629
Pocahontas	54,178	62,265	59,965
Southern	122,149	140,927	142,049
Northwestern	142,161	175,102	157,697
Central Western	140,618	165,474	154,466
Southwestern	72,481	84,449	80,475
Total Western Districts	355,260	425,025	392,638
Total All Roads	919,349	1,102,553	1,034,326
Commodities			
Grain and Grain Products	63,637	70,117	55,305
Live Stock	18,769	24,124	22,037
Coal	140,749	161,064	156,222
Coke	8,280	11,961	8,632
Forest Products	41,612	67,793	65,473
Ore	60,381	80,678	62,651
Merchandise L.C.L.	230,986	258,039	255,296
Miscellaneous	354,935	428,777	408,710
July 26	919,349	1,102,553	1,034,326
July 19	928,256	1,079,968	1,033,843
July 12	915,985	1,066,414	1,024,925
July 5	792,141	911,143	850,947
June 28	936,848	1,096,569	1,003,699
Cumulative total, 30 weeks	26,763,037	29,777,031	28,405,814

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended July 26 totaled 59,374 cars, a decrease from the previous week of 1,834 cars and a decrease of 10,679 cars from the same week last year.

Total for Canada	Total Cars Loaded	Total Cars Rec'd from Connections
July 26, 1930	59,374	28,955
July 19, 1930	61,208	29,848
July 12, 1930	60,871	26,898
July 27, 1929	70,053	38,998
Cumulative Totals for Canada		
July 26, 1930	1,765,180	1,036,462
July 27, 1929	1,984,576	1,258,066
July 28, 1928	1,931,564	1,168,728

* * *

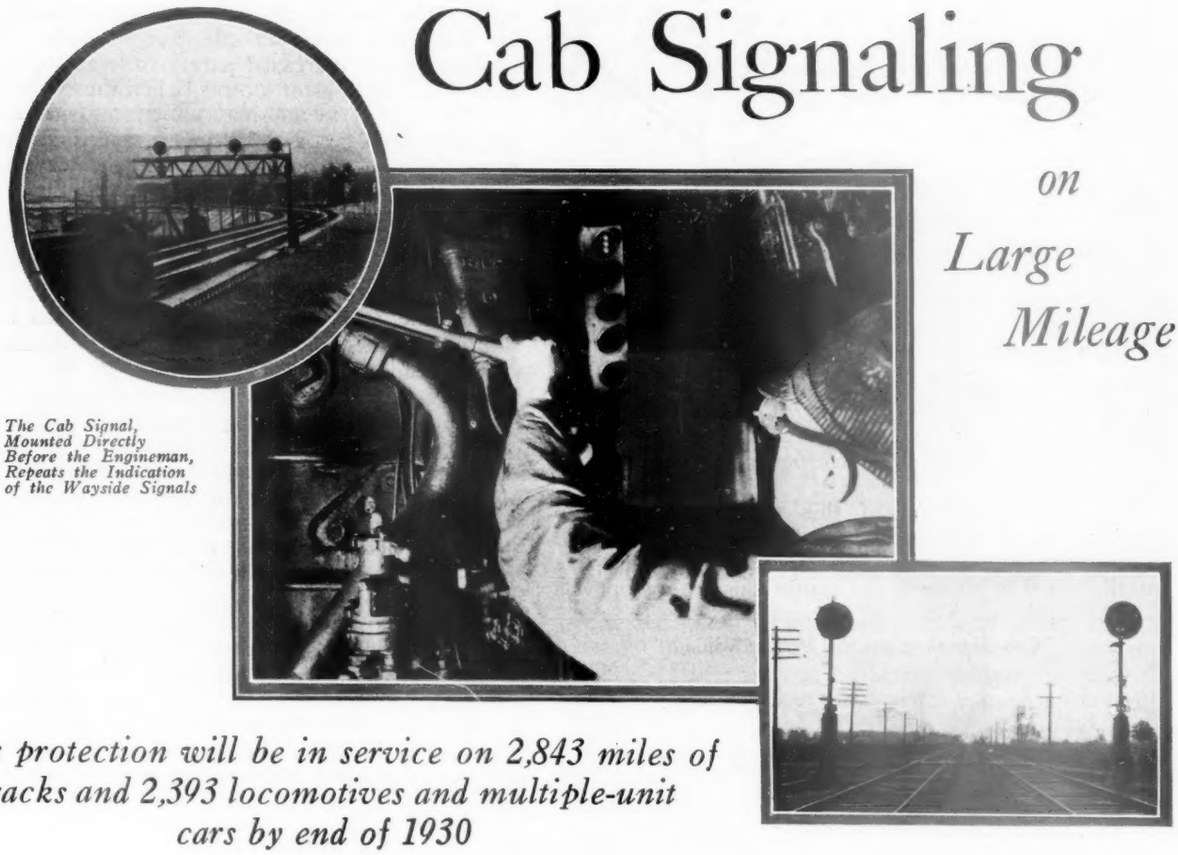


A Station on the St. Gothard Line, Switzerland

Pennsylvania Extends

Cab Signaling

on Large Mileage



The Cab Signal, Mounted Directly Before the Engineman, Repeats the Indication of the Wayside Signals

This protection will be in service on 2,843 miles of tracks and 2,393 locomotives and multiple-unit cars by end of 1930

THE Pennsylvania is pursuing an active program to provide continuously-controlled cab signaling, in addition to existing automatic wayside block signals, on several of its most important passenger routes. By the end of the present construction season, in November of this year, two of the most recent projects will be completed. The first will provide cab signaling on the 214 miles of main line between New York and Washington, D. C., a considerable proportion of which line is located near the Atlantic coast where, during certain seasons of the year, fogs have heretofore interfered with train operation by obscuring the wayside signals. The second installation to be completed this year, on the 112 miles of line from Altoona, Pa., to Pittsburgh was likewise provided to increase the safety of train operation over the Allegheny mountains where fogs and storms prevail at certain seasons. These are all multiple-track lines with from two to six tracks carrying fast freight and passenger traffic.

The two installations mentioned involve 1,183 miles of tracks and 813 steam locomotives, one electric locomotive and 200 multiple-unit cars for electric propulsion, which motive power is equipped with cab signal apparatus, but not with the control devices for stopping the train automatically, as used on the strictly train control installations of 692 miles of road, 1,649 miles of tracks and 1,130 locomotives on other sections of the system as required by the orders of the Interstate Commerce Commission.

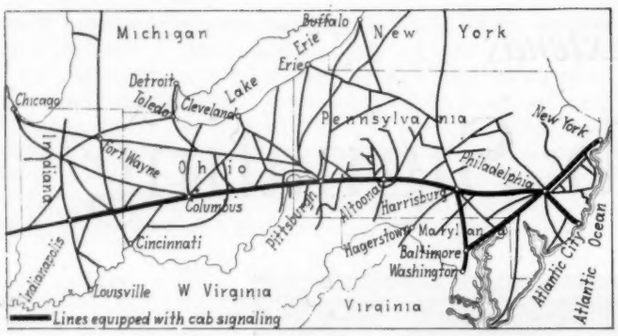
The motive power in service on territories shown in the accompanying table, is equipped for cab signaling, and includes 1,927 steam locomotives, 16 electric locomotives and 450 multiple-unit cars. Two hundred of the multiple-unit cars are assigned to the Philadelphia district and the remaining multiple-unit cars and 15 of the electric locomotives are on the Long Island. Sixty-three of the steam locomotives operate also over the New York & Long Branch.

Pennsylvania Starts Development in 1922

Soon after the Commission issued the first train control order in 1922, the Pennsylvania, for the purpose of test and development, made an installation of the Union Switch & Signal Company's three-speed continuous train control on 45 miles of its Sunbury division with 12 locomotives equipped. The continuously-controlled cab signal used on this installation and forming an integral part of the continuous system, was a new development of considerable importance and utility. Having secured the desired results, this installation was dismantled in 1926.

In the meantime the Commission had announced, in July, 1924, that the permissive or forestalling feature could be used with the simple train stop, which does not include the speed controller. The Pennsylvania, therefore, decided to install the continuous system with the permissive feature, in the belief that the cab signal, which it includes, was of great benefit in giving advance and continuously accurate information to the engineman irrespective of weather conditions.

Before starting on the installation of train stop on the territories specified by the Commission, the Penn-



Map Showing Lines Equipped with Cab Signaling

sylvania decided that modern a-c. automatic block signaling, using position-light signals, should be provided as the basis for the wayside apparatus. In order to eliminate the possibility of interference in the operation of the signal system, as well as of the train-stop system, from 60- to 25-cycle commercial or power circuits, it was decided to use 100-cycle power for the wayside apparatus.

The first installation of this signaling with train stop was placed in service between Baltimore, Md., and Harrisburg, Pa., on July 17, 1926. At the time this installation was planned, the continuous train-stop was chosen as the most highly-developed system then available to meet the requirements, and three-indication cab signals were provided by means of track and loop circuits. In order to standardize the engine equipment, this installation was later changed over to the new code system installed later on the other divisions.

Cab Signaling on the Pennsylvania

From	To	Miles of Road	Miles of Track
Manhattan Transfer, N. J..	Washington, D. C....	214	719.2
Baltimore, Md.	Harrisburg, Pa.	81.5	163.0
Harrisburg, Pa.	Altoona	130.4	490.2
Camden, N. J.	Atlantic City	56.4	112.8
Pittsburgh, Pa.	Columbus, Ohio	189.4	445.6
Columbus, Ohio	Indianapolis, Ind.	187.0	352.0
Long Island R. R.	.....	47.0	85.2
Altoona, Pa.	Pittsburgh	112.3	464.0
	Total	1,017.9	2,831.9

Code System Brought Out in 1926

Developments were being made for the purpose of producing a system that would not only be universally applicable to railroads of both steam and d-c. or a-c. electric propulsion, but would also provide a continuous cab signal with four indications. The Union Switch & Signal Company's coded system of continuous automatic train stop was the result. This system is a definite advance in the art of continuous control in that the currents used for transmitting "proceed" indications to the moving train, are of a distinctive character not previously employed in railway signaling or elsewhere. Immunity from interference is provided inherently, because the engine relay is designed to respond selectively to the 100-cycle track current periodically interrupted at the code frequencies and to this character of current only.

The locomotive equipment provides means for applying the brakes automatically after a more restrictive cab indication is given; means have also been provided for preventing such brake application, as well as for releasing the brakes after an automatic train-stop application. This code system was installed first on the West Jersey & Sea Shore division of the Pennsylvania, where it was completed on March 20, 1927.

The cab signal, as used on the Pennsylvania, affords a continuous indication of the occupancy of the track ahead and provides protection at all times against such hazards as a switch being open or a car drifting out to foul the main track, even after the train has entered the automatic block in question. Another great advantage is the increased safety of train operation afforded during fogs or storms, when the engineman cannot readily observe and may sometimes entirely miss the wayside signals. A reduction in speed at such times to permit the engineman to "find" the wayside signals often causes serious delays, whereas with cab signals, trains can make the regular schedules with full knowledge of the signal indications.

The increase in safety provided by the continuously-controlled cab signal has not sacrificed track capacity, but on the other hand, track capacity has been substantially increased. Any changed conditions on the track ahead are reflected instantly in the cab. Delay time in a restricted block may be appreciably decreased therefore, because a change to a more favorable indication permits the engineman to increase the train speed before the next wayside signal is reached. The visibility of the signal in the cab also permits scheduled speed with safety under unfavorable weather conditions.

In consideration of these advantages of cab signaling, the Pennsylvania has seen fit to provide this additional protection on certain divisions as previously stated, but without using the automatic train control apparatus for applying the air brakes automatically. The cab signal is an effective means of informing the engineman, and fireman as well, of the conditions ahead, and further, it is the belief of the Pennsylvania that an automatic application of the brakes may cause an accident, especially on mountain grade, which might be of a serious nature, particularly on multiple-track lines.

How Coded Continuous Cab Signal System Functions

Reference to the diagram will illustrate how the wayside signal is repeated in the cab and also how the cab signal gives continuous information as to the condition of the blocks ahead. Assume that a train is about to enter the first of four blocks, the fourth being occupied. As the engineman accepts the "clear" indication of the wayside signal, the "clear" indication on the cab signal appears in the engine cab. When the train enters the second block the "approach-restricting" indication of the wayside signal appears as the "approach-restricting" aspect of the cab signal and at the same time a warning whistle blows. This whistle continues to blow

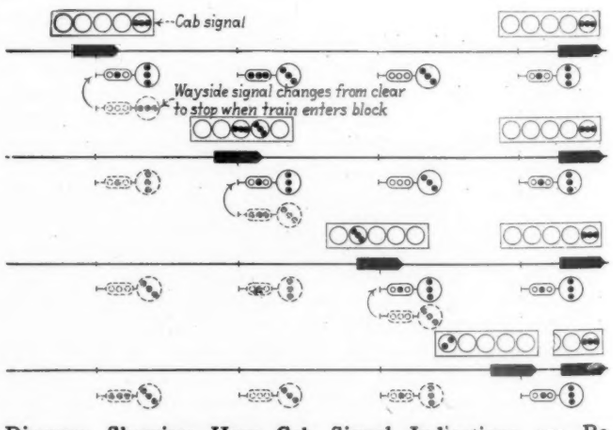


Diagram Showing How Cab Signal Indications are Received by Following Train in Four Different Blocks With Train Standing in Fourth Block

until the engineman acknowledges the change to a more restrictive indication by the operation of the acknowledging lever. The engineman then reduces the speed of his train. When the train enters the third block the "approach" indication of the wayside signal appears on the cab signal and the warning whistle blows again indicating that the signal has again changed to a more restrictive indication. The engineman again reduces the speed of his train. If the train enters the fourth or occupied block there will be another change in the cab signal indication, this time to "caution-slow-speed," and the warning whistle will blow until acknowledged by the engineman. This change warns the engineman of the fact that the block which he is entering is occupied and that he must reduce his train speed to the limits set by the rules and be prepared to stop short of any obstruction.

This explanation and the diagram apply to what is known as the three-block indications. Ordinarily only three of these four indications are necessary, i.e., "Clear," "Approach," and "Caution-Slow-Speed." For example on double-track lines the blocks are approximately two miles long so that the "Approach-Restricting" indication is not needed. With cab signaling, longer blocks are practicable, because the change of the cab signal to a more favorable indication eliminates delays which would otherwise occur. The fourth indication, i.e., the "Approach-Restricting" is used where blocks are necessarily short and for the sections approaching interlockings, the approach-restricting indication being displayed under certain conditions, as for example, when an approaching train is to be routed over a long crossover.

Thus it can be seen that the engineman, as well as the fireman, has before him in the cab an indication of the conditions of the block in which he is running, continuously controlled by the conditions ahead. Should the conditions ahead change in such a way as to affect the block in which he is running after he had passed the wayside signal, the engineman will be made aware of the change instantly. If the indication displayed by the cab signal changes to a less favorable one, he must demonstrate his alertness to the change by the operation of the acknowledging switch, while if the change is from a less favorable indication to one more favorable, he may accelerate his train accordingly. If the cab signal shows "caution-slow-speed" and changes to a more favorable indication, the train is required by rule to run its length before accelerating, in order to guard against the possibility of a broken rail having caused the signal to indicate "caution-slow-speed."

The construction and operation of the coded continuous cab signaling system used on these installations was described in detail in an article printed in the April, 1928, issue of Railway Signaling. The system used on the Pennsylvania was manufactured by the Union Switch & Signal Company and was installed by Pennsylvania Railroad forces.

THE LONDON, MIDLAND & SCOTTISH (Great Britain) is equipping an automobile to be used for special publicity purposes, according to Commerce Department reports. The car will make a year's tour of England, Scotland and Wales, covering about 30,000 miles, and visiting all important centers of population, as well as smaller towns and villages. Slogans to be displayed on the sides and back of the vehicle will be changed mechanically every 10 seconds, while the attendant in charge of the car will distribute literature and answer questions concerning rail transportation.

B. & O. Seeks to Acquire the Reading and C. & A.

THE formation of the Interstate Commerce Commission's proposed fifth system, based on the Baltimore & Ohio, has moved definitely forward as the result of negotiations by the latter company looking to the control of the Chicago & Alton and the Reading. Control of the former company, in receivership, the B. & O. proposes to acquire by purchase of its first lien 3½ per cent bonds and its 6 per cent first mortgage bonds. Purchase of the former is now under negotiation with the banking representatives of the holders of the majority thereof while, it is understood, the acquisition of the latter block of securities has already been consummated, although no formal announcement of either transaction has at this writing been made public.

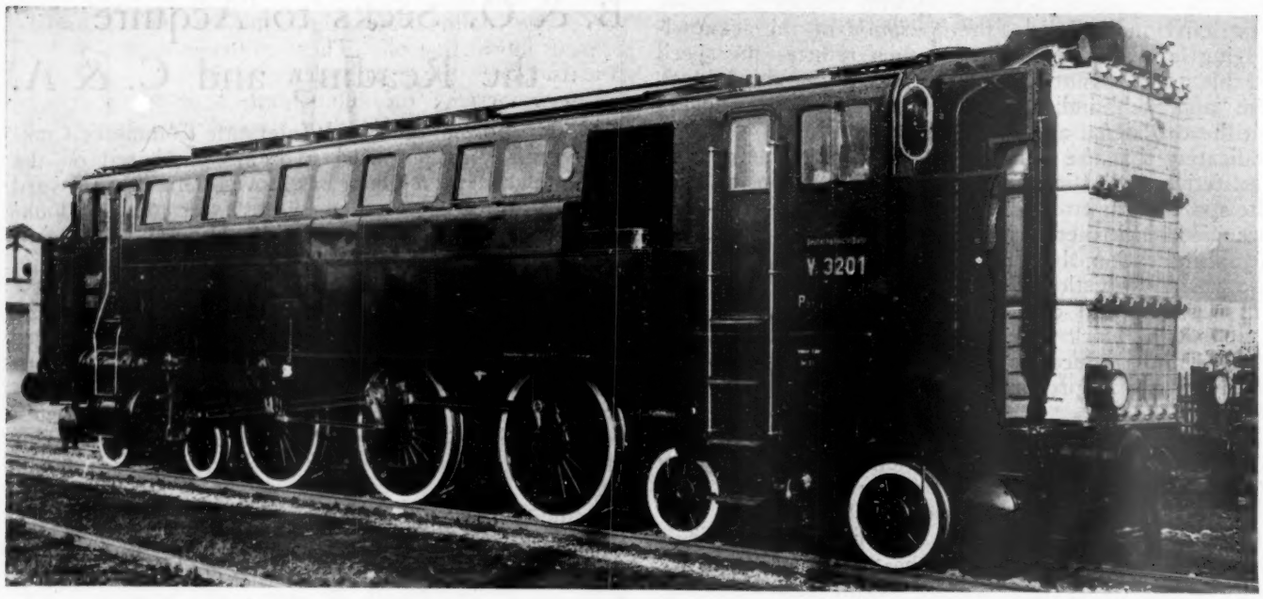
Acquisition of control of the Reading, in which the Baltimore & Ohio already has a substantial stock ownership, falling short, however, of a majority, depends upon the willingness of the New York Central to dispose of its substantial holdings of this stock. This, it is reported, the New York Central is willing to do provided it is granted certain trackage rights over the Reading and its subsidiary company, the Central of New Jersey.

The acquisition by the Baltimore & Ohio of the bonds of the Chicago & Alton would presumably hasten a foreclosure sale of that property enabling the B. & O. to acquire full control.

With the completion of these transactions, the Baltimore & Ohio should begin definitely to take shape as the System No. 5 envisioned in the Interstate Commerce Commission's consolidation plan. Consolidation into a single corporation, of course, would not obtain, but the first step toward that end would have been taken. The major lines assigned to the B. & O. group under the commission's plan were the Buffalo, Rochester & Pittsburgh, the Chicago & Alton, the Reading, the Central of New Jersey, the Detroit, Toledo & Ironton and the Monon. Since control of the B. R. & P. has already been acquired, consummation of the present negotiations would thus complete the system except for the Monon, the Detroit, Toledo & Ironton and various short lines.

The noteworthy change in the railroad set-up of the country occasioned by the project now under negotiation is the addition of the C. & A. to the group, other properties acquired being no very novel relationships, since the B. & O. has heretofore been closely allied with the Reading and Jersey Central and, to a lesser degree, with the B., R. & P. The acquisition of the Alton, however, will place the B. & O. definitely beyond the Mississippi, giving it a strong entrance into the Kansas City gateway and a heavy-traffic Chicago-St. Louis line, attributes possessed by none of the other lines which under one ownership connect the Atlantic seaboard with the Middle West.

Acquisition of control ot the Reading and Central of New Jersey will, of course, greatly strengthen the B. & O. in New York, which it now reaches only by trackage agreements with these two companies. Valuable terminal properties in New York harbor will pass to its control and the final step antecedent to the completion of the proposed Baltimore & Ohio short line across Northern Pennsylvania will have been taken.



Diesel-Air 4-6-4 Type Locomotive Built by M. A. N. for the German State Railways

Diesel Locomotive with Compressed-Air Transmission

Built for the German State Railways—Rated tractive force of 26,455 lb.—Diameter of drivers, 63 in.

By Dr. Ing. Jos. Geiger

A DIESEL 4-6-4 type locomotive with compressed-air transmission was ordered in 1929 by the German State Railways from the Maschinenfabrik Augsburg Nurnberg A. G. and the Maschinenfabrik Esslinger for experimental service and test. This locomotive was placed in service during November. During these road tests, the locomotive hauled a 233-ton train over a line with a ruling grade of 2.3 per cent at an average speed of 12.5 miles an hour. This line had a number of sharp curves, but the maximum power of the Diesel engine was never required at any time during the run. The locomotive has since been on a test plant at the Grunewald shops of the German State Railways. Results of these tests have not as yet been released for publication.

The total weight of the locomotive in working order is 273,500 lb., of which 112,250 lb. is carried on the drivers. Compressed air is supplied to the cylinders, which are 27.56 in. by 27.56 in., at a working pressure of from 92.3 lb. to 99.4 lb., and at temperatures of from 626 deg. to 680 deg. F. The driving wheels are 63 in. in diameter and maximum tractive force 26,455 lb.

The Diesel engine is an M.A.N. six-cylinder, four-stroke, single-acting power unit, with 17.72-in. by 16.-53-in. cylinders. It is designed for a continuous output of 1,000 b.hp. and 1,350 i.hp. at 400 r.p.m. and for short overloads at 1,200 b.hp. and 1,630 i.hp., operating at a speed of 450 r.p.m.

A twin-cylinder, single-stage, double-acting air compressor, with 25.2-in. by 13.78-in. cylinders, supplies compressed air to the locomotive cylinders. The locomotive is designed for a maximum speed of 49.7 miles an hour and carries approximately 580 gal. of fuel oil.

Air Transmission Has Proved Satisfactory

Many engineers specializing in the design and operation of Diesel and compressed-air equipment expressed doubts as to the feasibility of a Diesel locomotive with air transmission. In fact some of these doubts were expressed editorially in several trade papers as late as February, 1930. It is interesting to note, therefore, that the tests of the locomotive which have thus far been made have proved the opposite.

There were a number of reasons for adopting air transmission. The tractive-force curve of a steam locomotive, which has proved so satisfactory in railroad operation, can be duplicated in the case of a locomotive the cylinders of which use compressed air instead of steam. It is also believed that the efficiency of the compressed-air transmission would be an improvement over that obtained with electrical transmission. This has been borne out by the fact that the Diesel-air locomotive uses 12 per cent less fuel oil per ton mile, when operating at a speed of 37.5 miles an hour than a Diesel-electric locomotive developing the same tractive force and operating at the same speed. Contrary to

the expectations of many, oil explosions have not occurred even in the test plant when electric sparks were purposely introduced into critical parts of the equipment to create oil explosions. No ice formations have occurred during any of the numerous test runs of the locomotive. The exhaust temperatures average 210 deg. F. even when the compressed air is expanded to nearly atmospheric pressure. The air superheaters have not become clogged with deposits of lubricating oil or soot. Neither has the operation of the compressor valves and other parts of the equipment been interfered with by such causes.

The Diesel Engine and Air Compressor

The Diesel engine is of the normal vertical-cylinder type and is somewhat similar to those used on the Diesel-electric locomotives built for the Russian Government in 1925, but embody several improvements in design.* The bed plate of the Diesel engine on the Diesel-air locomotive serves for both the engine and air compressor which are directly coupled. The normal speed of 400 r.p.m. of the air compressor is unusually high for a compressor of this size. Air compressors of this capacity—about 5,000 cu. ft. of free air per min.—are built for speeds of approximately 100 r.p.m.

The volumetric efficiency of the compressor is high in spite of the high speed and the high compression ratio for a single-stage compressor. Comparing the air quantity, measured by an orifice, with the piston displacement less re-expansion from the clearance space, one finds practically the same value, a proof that the losses through the suction and discharge valves must be extremely small.

The compressed air reaches the superheater by the shortest possible route, where it is superheated to 680 deg. F. in counter flow by the exhaust gases of the Diesel engine. The air flows from the superheater through a regulating valve to the two locomotive cylinders. Front and rear radiators of the laminated type recool the cooling water, the piston cooling oil and the bearing lubricating oil. These radiators are of welded construction. Electrically-driven fans are installed in order to increase the cooling effect of the radiators, but they are not needed for normal operating conditions.

* A description of the Russian Diesel-electric locomotives appeared in the January 31, 1925, issue of the Railway Age, page 321.

Auxiliary Equipment

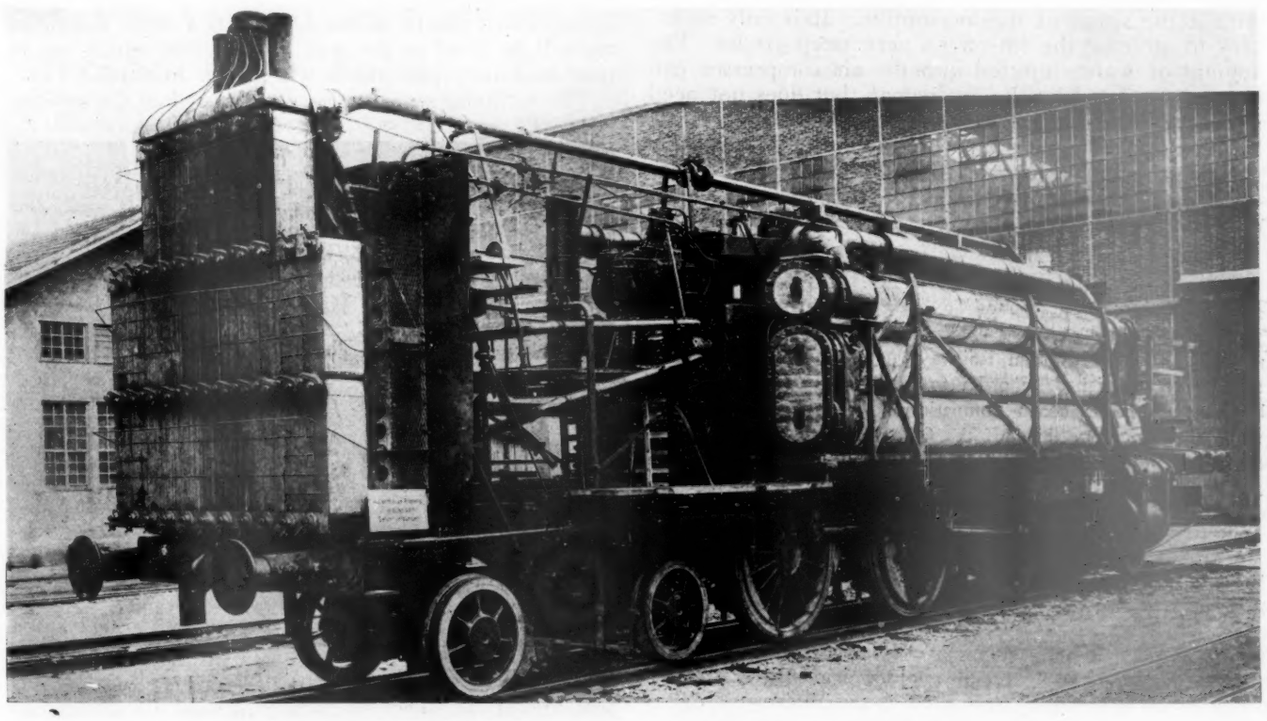
A generator, directly connected with the Diesel engine, furnishes the current for the lighting as well as for the fan motors. The Diesel engine also drives a compressor for the air-brake equipment. The main compressor can also supply this air. An oil-fired boiler is installed on the locomotive which is large enough to furnish heat for the train. Facilities for fuel and water supply have been provided on the locomotive.

The locomotive has an operating cab for the engineman, both front and rear, and it is therefore not necessary to turn the locomotive.

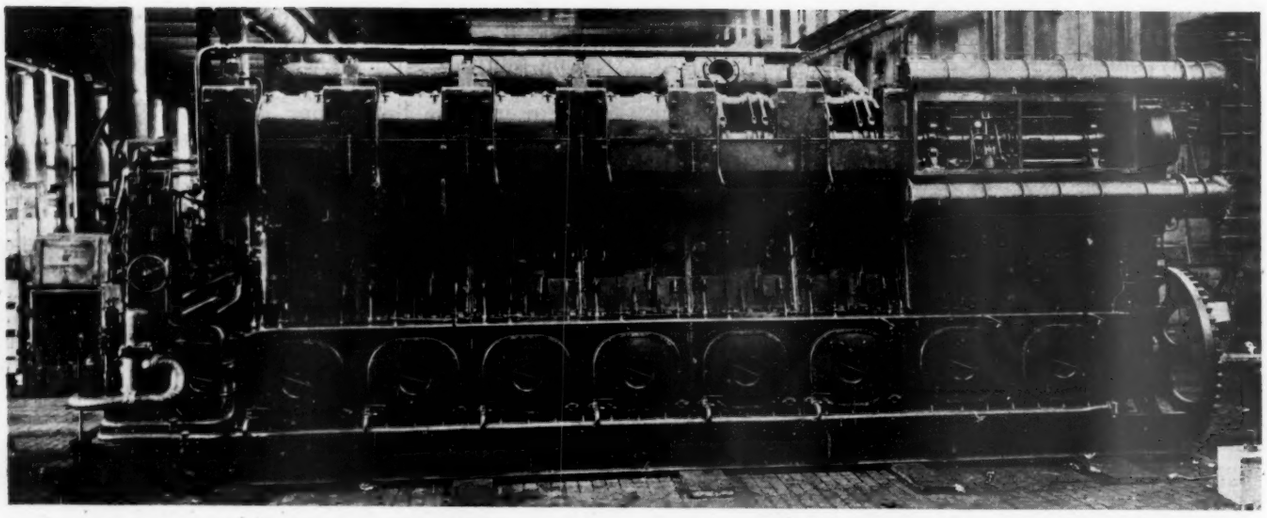
The two principal features responsible for the success of the compressed-air transmission are the water injection into the air compressor, and the superheating of the compressed air by the exhaust gases.

The compressor works, for well-considered reasons, without the normal cooling of the cylinders and cover walls. A separate pump supplies a fine spray of water through nozzles into the compressor cylinder. This makes it possible to get a compression curve which is a close approximation to the isothermal. This could not be obtained with surface-cooling, on account of the high rotative speed necessary for the locomotive. The water injection increases the weight of the working medium and, on account of the lower compression end temperatures, allows a better utilization of the exhaust heat of the Diesel engine. The safe operating of the discharge valves is assured by the lower compression temperatures.

The water injection into the compressor is the reverse of the fuel injection into the Diesel engine. While it



The Locomotive After the Installation of the Air Compressor and Accessories



The M.A.N. 1,200 B. Hp. Diesel Engine and Air Compressor

is desirable in the latter to obtain a temperature rise through combustion of the fuel and thereby increase the area of the indicator cards, the object of the compressor-water injection, is a lowering of the compression temperature in order to get the smallest possible area of the indicator card.

The operation of the locomotive is simple. The compressor is started by moving the regulating-lever to operating position. It is under no load until the locomotive has started. There is no compressed air in the superheater. The air pressure rises quickly and the locomotive can be set in motion as quickly as a steam locomotive. The cut-off of the locomotive cylinders can be reduced after starting. Further regulation of the speed is performed by regulating the amount of fuel injected into the Diesel engine. If the supply of fuel oil is increased, the engine runs faster and the compressor delivers more air, the air pressure rises and with it the speed of the locomotive. It is only necessary to increase the cut-off on very steep grades. The amount of water injected into the air compressor can also be regulated by the engineman, but does not need special attention. The engineman is free to concentrate his attention on handling his train.

Since the fuel consumption is low, it is possible for the Diesel-air locomotive to operate long distances without being required to stop for water and fuel.

THE NATIONAL CHAMBER OF COMMERCE OF MEXICO has recommended that third class passenger accommodations, which were abolished by the National Railways of Mexico several years ago, be re-established, in order to regain passenger traffic lost because of motor coach competition. The third class rate would be about one-third of the first class rate in the United States, second class about two-thirds, and first class the same as the corresponding rate in the United States.

UNDER A NEW RULING by the Postmaster General of Great Britain, according to Department of Commerce reports, highly perishable goods, such as meat, fruit and cut flowers, up to a maximum weight of 200 lb., may now be sent C. O. D. by passenger train, the amount being collected by the Post Office under the present system and remitted immediately to the consignor. The new plan, sponsored by the Ministry of Agriculture, is expected to prove of particular benefit to farmers and market gardeners.

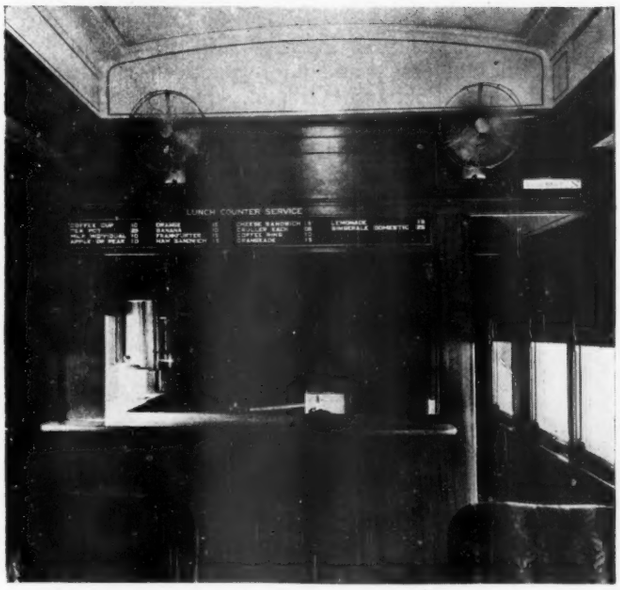
"Night Coaches" on the Baltimore & Ohio

ON its through night trains between New York and Washington the Baltimore & Ohio has introduced day coaches which have been fitted with facilities designed for the convenience of all-night travelers who do not make use of the regular sleeping cars. Four of these cars have been put in service. In addition to reclining seats, each car has a smoking compartment for women at one end and for men at the other, the furnishings of the women's compartments including comfortable arm chairs.

Between the main compartment of the car and the women's lounging room is a lunch counter which serves lunches, coffee and soft drinks. In addition to the ceiling lights, which can be dimmed, there is a small individual night light fitted to the wall at each seat which can be used at will by passengers who desire to read.

The reclining seats are easily adjusted to the position

The Reclining Seats and Side Lights in "Night Coaches"



The Lunch Counter of the Baltimore & Ohio Reclining Seat Car

desired by the passenger by turning a ratchet handle in the side of the seat. Foot rests are also provided, adjusted to the proper angle to give the occupant of the seat a restful posture when the seats are reclined. The arm rests of the seats are of a soft sponge rubber composition. The middle arm rests are collapsible and disappearing, so that they may be removed if desirable.

The floor within and around the lunch counter is covered with inlaid rubber. The aisles are carpeted.

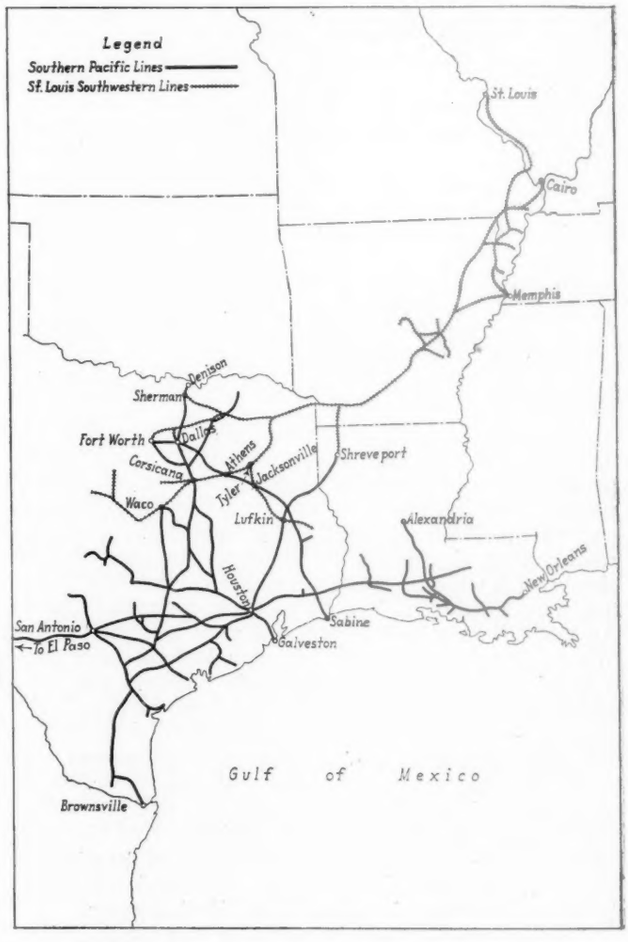
How the Cotton Belt Fits the Southern Pacific Lines

THE pending application of the Southern Pacific to the Interstate Commerce Commission for authority to acquire control of the St. Louis Southwestern Lines represents another step in the juggling for the final disposition of the Cotton Belt that has been in progress since 1924. The Cotton Belt, while not as strictly a part of the Gould system as were the Missouri Pacific, the Texas & Pacific, the Denver & Rio Grande Western, the International-Great Northern, the Wabash and the Wheeling & Lake Erie, was the last of the roads to be given up by the Goulds.

In the latter part of 1924 a controlling interest in the Cotton Belt was acquired by the Chicago, Rock Island & Pacific, and in the following year, while proceedings for approval of the transaction were pending before the commission, the stock was disposed of to the Kansas City Southern. This control of Cotton Belt stock by the Kansas City Southern was one of the first steps in the unsuccessful attempts of L. F. Loree to consummate a merger of these roads and the Missouri-Kansas-Texas. The rejection by the Interstate Commerce Commission of the first merger plan for these roads in 1927 was immediately followed by the presentation of a second plan. Following complaint by the commission of violation of the Clayton Anti-Trust law by the M-K-T in connection with its acquisition of Cotton Belt stock, the merger plan application was withdrawn from commission consideration late in 1928. Soon thereafter all rights of the Katy to acquire Cotton Belt stock from the Kansas City Southern expired.

The acquisition of the Cotton Belt will aid the Southern Pacific in its movement of perishables from the Imperial valley in California to the east—a traffic which has averaged 35,000 cars yearly for the past four years. Originally all the canteloupe traffic, which is the largest single item in the perishable movement now approximating 20,000 cars per year, was routed via the Southern Pacific and El Paso & South Western to Tucumcari, N. M., and then via the Rock Island. In recent years, however, several new routes have been evolved and the business is now highly competitive east of El Paso, Tex. About half of the movement still goes via Tucumcari and the Rock Island, the remainder being divided about equally between the Texas & Pacific and the Southern Pacific-Atlantic System. The Southern Pacific-Atlantic System handles cars to Corsicana, Tex., where delivery is made to the Cotton Belt for movement to St. Louis.

Hale Holden, chairman of the executive committee of the Southern Pacific, upon the occasion of the announcement of that road's intentions with respect to the Cotton Belt, pointed out the increasing interchange of traffic between the two railroads. Connection is made with the lines of the Cotton Belt at Waco, Tex., Fort Worth and Dallas and Shreveport, La., providing three through routes between Southern Pacific lines and the Memphis, Tenn., and St. Louis, Mo., gateways.



The Southern Pacific in Texas and Louisiana and the St. Louis Southwestern

One of these routes is that over the Houston East & West Texas from Houston, Tex., to the Cotton Belt at Shreveport. Another connects Houston with Fort Worth and Dallas and the Cotton Belt via the Houston & Texas Central, while the third over the San Antonio & Aransas Pass connects with the Cotton Belt at Waco.

The physical improvements and extensive line and grade revisions that have been carried out by the Cotton Belt make the road attractive to the Southern Pacific as an operating property, while although heavily capitalized it is in good enough financial shape to allow it to earn a fair margin over its 5 per cent preferred dividends. Merger of these roads would allow the consolidation of facilities at a number of points in Texas.

Mahaffie Succeeds Woodlock

WASHINGTON, D. C.

THOMAS F. Woodlock has resigned as a member of the Interstate Commerce Commission to become contributing editor of the Wall Street Journal, and President Hoover on August 1 appointed Charles D. Mahaffie, who has been director of the commission's Bureau of Finance since May 1, 1923, to succeed him, thus forestalling the long parade of candidates backed by Senators that usually occurs when a prospective vacancy is well known in advance. It had been no secret around the commission offices that Mr. Woodlock did not expect to seek reappointment at the expiration of his term at the end of this year, but he explained that he had submitted his resignation at this time so that Mr. Mahaffie could take up his duties at the beginning of a "commission year."

Mr. Mahaffie's name is understood to have been considered in connection with the last two or three vacancies in the commission and his appointment represents the second occasion in recent years of an appointment from the commission's own organization, P. J. Farrell having been appointed by President Coolidge after serving for many years as chief counsel for the commission. The usual controversy as to representation of various sections of the country in commission appointments was to some extent avoided by naming Mr. Mahaffie as from the District of Columbia, where he has been in government service since 1916, although he was born in Kansas and practiced law both in Oklahoma and in Oregon.

As director of the Bureau of Finance of the commission, Mr. Mahaffie has had immediate charge of the preparation of reports and the administration of those parts of the interstate commerce act relating to applications involving security issues, acquisitions of control, construction and abandonment, etc., and the efficiency with which this branch of the commission's work has been conducted has often been commented upon. As the railways have made it a very general practice to consult informally with Director Mahaffie and members of Division 4 regarding their financial plans for which commission approval is required, he has had a most intimate connection with the details of railway financing and with the various strategic moves that have been made in connection with the consolidation program, and has shown a keen grasp of the subject. The bureau reports directly to Division 4 of the commission of which Commissioner Woodlock has been a member, and Mr. Mahaffie has conducted several of the more important hearings in unification cases.

Charles Delahunt Mahaffie was born at Olathe, Kan., in 1884. He was graduated from Kingfisher College, Oklahoma, in 1905 and spent three years at Oxford University as a Rhodes scholar from Oklahoma. From 1908 to 1909 he was instructor in jurisprudence at Princeton University and later practiced law in Oklahoma and at Portland, Oregon. He entered government service in 1916 as solicitor in the Interior Department and from July 1, 1921, to May 1, 1922, was attorney for the United States Railroad Administration at Washington, D. C. On May 1, 1923, he was appointed director of the Bureau of Finance of the Interstate Commerce Commission, succeeding W. A. Colston.

Mr. Woodlock was appointed to the commission in January, 1925, by President Coolidge and a long fight ensued in the Senate before he was confirmed because

Thomas F. Woodlock

Charles D. Mahaffie

of opposition based on his previous connection with financial houses, views expressed in his writings on railway subjects, and the fact that although a Democrat, he had sometimes voted for a Republican. On the commission he has conducted a vigorous fight for fair treatment of the railways although he has not always assented to the proposals of the railways. He has been outspoken in his criticisms of commission policies that have been directed toward keeping down the valuations of railway property and has often objected to rate levels prescribed by the commission as being too low. As the only member of the commission with a practical knowledge of railway finance, much of his attention has been devoted to that branch of its work, and in separate concurring or dissenting opinions he has kept up a running debate with Commissioner Eastman, also a member of Division 4.

In announcing Mr. Woodlock's resignation, President Hoover said that he had "rendered a very distinguished service to the commission and is going out to private life entirely of his own volition, and much to the regret of the commission and everyone who has known him."

Mr. Woodlock began his business life in this country in the staff of the Wall Street Journal in 1892 and he was later editor of the paper for some years. He will write a daily signed column for that paper and among his first contributions will probably be his impressions of the work of the commission.

THE CHICAGO, ROCK ISLAND & PACIFIC is painting the roofs of its suburban cars with aluminum paint to reflect, as much as possible, the rays of the sun and help make the car interiors more comfortable in the summer days. The application of aluminum paint to passenger cars is a result of the favorable results produced by painting caboose cars in this manner, as described in the *Railway Age* of July 12.

D., L. & W. Depends More and More on Laboratory Work

Co-operative analyzing found in technical operations at Scranton—Purchasing protected

By J. J. Laudig

Chemist and Engineer of Tests, Delaware, Lackawanna & Western, Scranton, Pa.

In the Chemical Room at Scranton

IT is probable that many railway men do not realize that the microscope and retort of the chemist and physicist are constantly at work on some railroads in much the same way as they are at work for improvements in medicine, in the automobile, the electrical industries, etc. The Delaware, Lackawanna & Western affords an illustration that such is the case in the laboratory work it does at Scranton, Pa. This laboratory has been engaged in scientific work for the road during the past twenty years. Analyzing and testing for the protection of the road's purchases figure prominently in the work, while the services extend to considerable research and routine work as well—among them, bacterial testing and heat-treatment control. About 15,000 samples are analyzed at the laboratory in a year.

The laboratory is a two-story building of concrete and brick, with a basement. The first floor is equipped with testing machines of 500, 50,000 and 200,000 lb. capacity; also with lathes, a drill press, power saw, etc., for preparing samples and test specimens of new material and failed parts under investigation. It is equipped with a vibratory test machine for making fatigue tests of metals, with complete experimental plant apparatus for testing cement, concrete and aggregates; with friction, tensile and pressure apparatus for testing hose, tapes and rubber goods; and has a room where coal, coke and nonmetallic materials are ground and sampled.

The second floor is equipped as a chemical laboratory with separate rooms equipped for bacteriological and metallographic work. The chemical laboratory analyzes paints, brass, asphalts and waterproofing material, steel, iron, boiler water and coal, and controls by analysis the shop brass and steel foundry, etc., and the operation of water-softening plants.

The bacteriological laboratory is equipped with electric refrigerators, sterilizers, incubators and other apparatus for examining drinking-water samples, both city and company supplies, from wells and springs, and for the sanitary control of all drinking-water supplies on the road. The expansion of this department came with the discovery of drinking water of poor quality at isolated locations several years ago. Since that time all locations and labor camps having wells, pumps, etc., on company property, have been inspected and analyzed. As a consequence, many improvements have been recommended and carried out, thereby giving and maintaining better protection to all drinking-water supplies along the railroad. In this work, the laboratory has co-operated with the United States Public Health Service in conducting experiments and tests on water and sanitation.

The metallographic laboratory has a Leitz metallograph and other apparatus for polishing, etching and photographing steel. This department also controls the heat treatment of locomotive alloy forgings and other materials in the locomotive shops. This work is of growing importance, as expensive alloy steels are being used more frequently on locomotives, and uniform, high grade forgings must be supplied free from defects and capable of giving dependable service. The careful metallographic control of the heat treatment of manufactured and purchased forgings has resulted in a remarkable decrease in the number of failures in service and has fully justified its introduction.

The value of the laboratory work to the railroad cannot be expressed in actual monetary figures, but the increasing service to the heads of the various departments has justified its inception. In several cases, the solution of individual problems has resulted in savings to the road sufficient to justify the annual maintenance expense of the entire laboratory.

In order to secure the best materials, standard specifications are used whenever possible, and contact with improvements in manufacture and quality standards is maintained by membership in leading technical societies and active work on committees.

Prompt Inspection Helps Supply Forces

The testing of many materials which are used in quantity is done at the point of manufacture by the material inspectors of the laboratory force, who visit the plants when the material is ready for shipment. In most of these cases, the test pieces and drillings are forwarded by the inspector to the laboratory for analysis and metallographic examination, and the shipment of the materials is released from the laboratory. Tests on materials, pur-

chased to specifications, but not warranting inspection at the point of manufacture, are sampled by the storekeepers at destination and forwarded to the laboratory with the request for analysis. The laboratory is organized to make the tests promptly, and if the material is satisfactory, the forms are marked with a rubber stamp and one copy is returned immediately to the storekeeper so that the material can be released for service, the invoices approved without delay and advantage taken of any discounts allowed for prompt payment.

Freight-claim problems often find their solution in the laboratory where analytical methods and extensive libraries are available to decide questions which might otherwise entail a needless waste of time and money.

Boiler Waters Studied

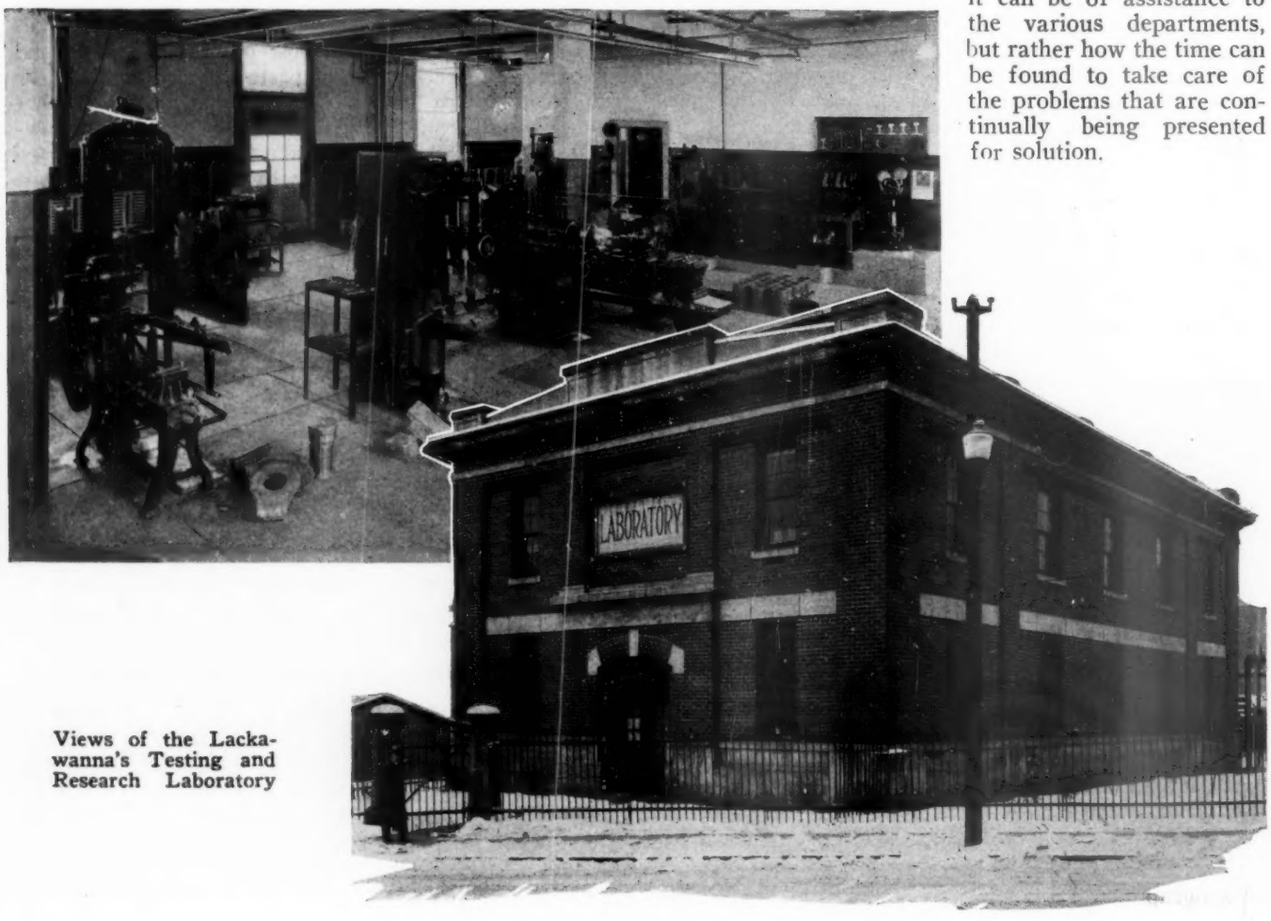
Among the research problems handled by the laboratory are the study of materials for the improvement of concrete, the reclamation of oils, and boiler water conditioning. Like other roads, the Lackawanna has had its share of the locomotive and stationary boiler troubles that arise from poor water supplies. Leaking, scaling and corrosion require heavy outlays for maintenance and keep units out of service for periods of reconditioning. The laboratory has studied and solved such problems individually and now controls the conditioning of water in most of the boiler plants by analysis and inspection. The reduction effected in the cost of cleaning, corrosion, saving of fuel, etc., has shown that such problems yield to scientific study. Boilers which were customarily held out of service for several weeks for cleaning are now out of service but a day for boiler washing and inspection.

Water surveys have also been made of all locomotive water supplies along the roads as to location and analysis. Analysis in many cases has shown the inferiority of water supplies, and recommendations for the removal of the facilities in some locations have been made where the water was exceptionally bad. Recommendations have also been made for the installation of water-treating facilities where the quality of the water was poor and a large quantity used and where savings in operation were shown possible by the removal of large amounts of encrustating material.

Work for Other Roads a Feature

Many roads do not maintain laboratories. This is because some railroads have never appreciated their importance, while others have considered their roads too small to justify the investment in facilities and organization. Co-operative arrangements wherein one laboratory is maintained by several roads have frequently been advanced as a solution of the smaller road's problem. The Lackawanna's laboratory is unique in the respect that it affords an example of what might be termed a co-operative enterprise of this kind, for, besides doing the testing and analyzing for the Lackawanna, it also makes chemical analyses for a neighboring carrier. This work is handled by adjusting the expense on the basis of work done for each. Because of the similarity of work to that done for the Lackawanna, it is handled without inconvenience and affords a volume of the work of one kind that makes the total cost less expensive to both roads. This arrangement has been in effect for several years and has proved mutually satisfactory.

There is a greater appreciation of the laboratory and of its consultation services now than ever before. Naturally, when a good piece of work has been done in assisting a department in solving a particularly difficult problem, requests for additional service are bound to follow. The question now facing the laboratory is not how it can be of assistance to the various departments, but rather how the time can be found to take care of the problems that are continually being presented for solution.



Views of the Lackawanna's Testing and Research Laboratory

Railways Assert Legality of Extra Fares

WASHINGTON, D. C.

BRIEFS have been filed with the Interstate Commerce Commission by eastern and western railways in connection with its investigation of the extra fares charged on certain of their best passenger trains in which they assert the legality of the practice which has prevailed for so many years and earnestly request the commission not to cause the reduction in passenger revenues which would result from their abolition. It is also declared that such an order by the commission might also have a disturbing effect on the regular fares by reason of the demand of the differential lines for fares to protect their competitive position.

Separate briefs have been filed on behalf of the Chicago & North Western, Union Pacific and Southern Pacific, the Atchison, Topeka & Santa Fe, and by the eastern lines, while a brief has also been filed by the Chicago Association of Commerce, which is contending that the present arrangement of fares discriminates against Chicago and in favor of St. Louis, and St. Louis has filed a reply.

"Today, more perhaps than ever before, due to causes well known, different service desires or requirements of different members of the traveling public must be met by these western roads in order to conserve as much as possible and enhance if possible their rapidly diminishing revenues," the western brief says, pointing out that entirely adequate non-extra fare service exists on the routes served by the extra-fare trains and that no complaint has been made respecting either the service or the amount of the extra fare.

One of the reasons for the institution of the investigation was the question raised in the commission's Bureau of Traffic as to whether or not some of the fares violate the aggregate-of-intermediates clause of the fourth section of the interstate commerce act. The eastern roads in their brief take the position that fourth section principles as they have come to be understood in their application to freight rates should not be applied to a situation such as that of the passenger-fare structure and point out that the commission has frequently recognized that fourth section relief is proper in the case of passenger fares because of the different situation involved.

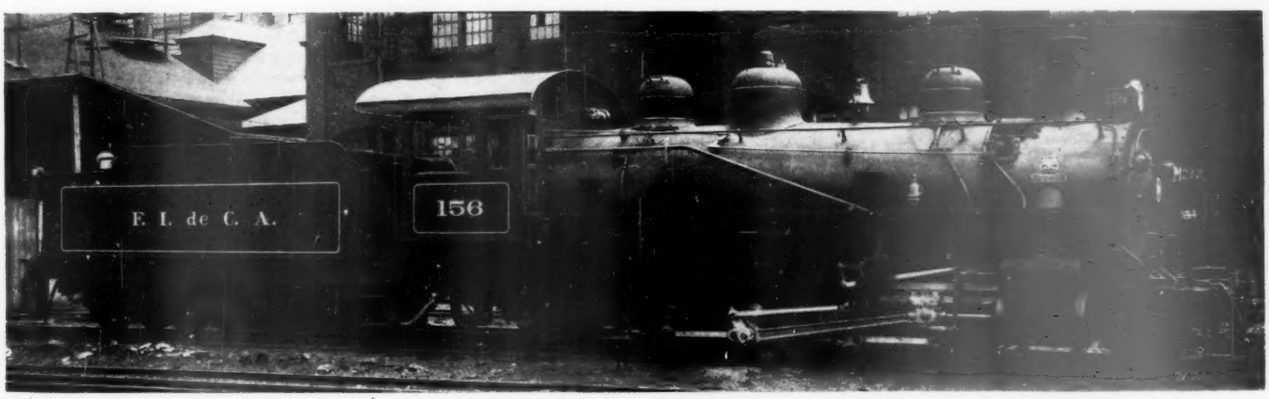
It is also asserted that "the present structure of refundable extra fares upon a time basis between New York and the basic time points and related points is one which has been subjected to the test of years and which has been found adequate and satisfactory considering all the various competitive and operating elements;" also that "the issue of reasonableness raised incidentally by the commission's order of investigation is clearly determined by the facts of record in the carriers' favor; in fact no party appeared to contest in any way the basic soundness of the principle of charging extra fare for superior service, or the reasonableness of the measure of the existing extra fare." The eastern roads showed that they have been deriving over $6,000,000 a year revenue from extra fares. The carriers' brief goes on to say:

"Concerning the fourth section issue, the carriers on whose behalf this brief is filed submit that refundable extra fares upon a time basis of the type covered by the applications which have been heard do not come within, and are not subject to, the terms of the provision of section 4 of the interstate commerce act. If they are so subject, then these respondents submit that such extra fares are of a separate and distinct type, and under familiar principles are to be compared only with extra fares of similar type, and that applying these principles virtually no departures exist.

"If the fourth section is applicable to such extra fares, these respondents submit that any departures which may exist have been entirely justified of record and that the commission should grant all necessary relief to enable applicants to maintain the existing time basis of extra fares in eastern territory.

"Considering the serious losses of revenue which would result from any reduction or elimination of extra fares, the profound and disastrous effect thereof upon the entire passenger service of the eastern lines, and the grave danger to the basic passage fares themselves from such reduction or elimination by reason of the demand of differential lines for fares which would protect their competitive position, and further considering the serious declines in passenger revenue which the carriers have suffered in recent years by reason of highway competition and their great present need for additional revenue, these respondents respectfully submit that the commission should take no action herein which would in any way disturb the present situation or deprive them of sorely needed revenue yielded by a traffic moving freely under the present basis of fares."

* * * *



A Narrow-Gage 2-8-2 Type Oil-Burning Freight Locomotive for the International Railways of Central America, Built by the H. K. Porter Company

Weight on drivers, 110,000 lb.; total weight, 147,000 lb.; tractive force, 26,500 lb.; cylinders, 18 in. by 22 in.; boiler pressure, 175 lb.; driving wheel diameter, 40 in.; total evaporative heating surface, 1,629 sq. ft.; superheating surface, 420 sq. ft.; grate area, 34 sq. ft.

New Books

Regulation of Railroad Finance, by John H. Frederick, Frank T. Hypps and James M. Herring. 227 pages, 9 in. by 6 in. Bound in cloth. Published by Simmons-Boardman Publishing Company, New York. Price $3.50.

The authors, who are members of the faculty of the Wharton School of Finance and Commerce, University of Pennsylvania, have here produced a practical, non-technical work on the financial regulation of railroads by the Interstate Commerce Commission under the Transportation Act of 1920. The book is conveniently divided into three parts, each outlining procedure methods and interpreting the commission's policy with regard to a different phase of the financial regulation situation.

Initial chapters deal with the issuance of certificates of public convenience and necessity for construction and abandonment of rail facilities. These are followed by a section devoted to the acquisition of control of carriers, while Part III considers the recapture of excess earnings. Reasons which have determined commission decisions in past cases are analyzed and from such analyses an outline of the commission's indicated principles and policies is gleaned.

The book is therefore valuable for collateral reading in college and university transportation courses and also as a reference work for all students of railway finance.

The Aluminum Industry, by Junius David Edwards, assistant director of research; Francis C. Frary, director of research, and Zay Jeffries, consulting metallurgist, Aluminum Company of America. Published by the McGraw-Hill Book Company, 370 Seventh avenue, New York. Two volumes, illustrated. Price, $12 per set.

The first volume of this set, which is entitled "Aluminum and Its Production," covers the history of the discovery of aluminum and the development of the industry, the ores of aluminum and their mining and refining for the production of pure alumina, and concludes with a discussion of the production of metallic aluminum. The general treatment of the subject is along broad lines, except in regard to the production of alumina from the ore, which has been treated in greater detail because of the widespread interest in the production of alumina. The second volume is sub-titled "Aluminum Products and Their Fabrication." It discusses the properties of aluminum and its alloys, the fabrication of aluminum products and their uses in the industries. Both volumes are well documented with references to patents and various scientific and technical publications in both Europe and America. In addition, Volume I closes with an appendix setting forth a list of books about aluminum and its alloys and several chapters in Volume II close with extensive lists of references to the literature dealing with the constitution and structure of aluminum alloy systems, properties of alloys of aluminum with other metals, and commercial alloys of aluminum. The books form a part of the Chemical Engineering Series.

The Balancing of Engines, by W. E. Dalby, F.R.S. Published by Longmans, Green & Co., New York. 321 pages, 6 in. by 9 in., illustrated. Price $8.40.

This is the fourth edition of a book published in 1902 for the purpose of showing a new method of solving balancing problems and of finding balance weights. The novelty of the method was the introduction of the idea of a reference plane and schedule which would enable a competent draftsman to find the balance weights for a complex system of masses about an engine crank shaft with a drawing board and slide rule. The main object of the fourth edition remains unchanged, but new applications of the principle are described. The book now contains the following chapters: The Addition and Subtraction of Vector Quantities; The Balancing of Revolving Masses; The Balancing of Reciprocating Masses—Long Connecting Rods; The Balancing of Locomotives; Secondary Balancing; Estimation of the Primary and Secondary Unbalanced Forces and Couples; The Vibration of Supports; The Vibration of Railway Bridges; the Motion of the Connecting Rod, and The Balancing of Internal Combustion Engines. Of particular interest to railway engineers are Chapters IV, VII and VIII. Chapter IV deals comprehensively with the problems of balancing various types of locomotives, including both inside and outside connected, combinations of the two, and three-cylinder locomotives. Chapter VII, entitled "The Vibration of Supports," deals with the periodicity of masses under the action of periodic forces and damping, and simultaneous action of several forces or couples in various periods, etc. Chapter VIII, which deals with the vibration of railway bridges, is based on the investigation of a Bridge Stress Committee appointed by the British Department of Scientific and Industrial Research which was organized "to conduct researches with reference to the stresses in railway bridges, especially as regards the effects of moving loads." The field work of the committee continued from 1923 to 1927 and its report was finished late in 1928. The chapter deals with the work of this committee, giving an account of their experiments, conclusions and recommendations for the impact allowances to be made in railway bridge design. In the light of the work of this committee, the chapter on locomotive balancing has largely been rewritten in this edition.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Economic Periodicals of Foreign Countries Published in the English Language—A Selected List, compiled by Louise O. Bercaw. Revised by M. I. Herb. Sources of data on transportation included. Agricultural Economics Bibliography No. 11 (Revised 1930). 28 p. Pub. by U. S. Bureau of Agricultural Economics, Washington, D. C. *Apply.*

Great Markets of America—New York City. This pamphlet, containing more than 1,000 facts about New York City, presents the high lights of the boroughs of Manhattan, Bronx, Brooklyn, Queens and Richmond. It gives the number of workers engaged in all gainful occupations, individual income tax returns, manufacturers, conventions, consumption of commodities, transportation facilities, etc. 36 p. Pub. by General Outdoor Advertising Company, 1 Park avenue, New York. *Apply.*

Principles of Box and Crate Construction, by C. A. Plaskett, senior engineer of the Forest Products Laboratory, United States Department of Agriculture. Based on extensive investigation and experiments supplemented by study and observation of shipping containers in service. The leading conclusions have been confirmed by manufacturers and shippers after critical review and tests under actual service conditions. Particular attention is given to the kinds of failures to which each type of container is subject and to the changes in construction that will overcome these failures or render their recurrence less likely. Technical Bulletin No. 171. 134 p. $0.55.

Romance in a Railroad Circular. "The thing that makes it different from the ordinary run of circulars is the line reading 'Joint Rail-Air Service' and the fact that in the close lines of fine type that it carries there appear names that have heretofore had no place in railroad circulars . . . Here are a few of them: Miami-Havana . . . Venezuela via Eastern Gateway; . . . Canal Zone-Uruguay; West Indies, Lesser Antilles-North Eastern South America." Timely Railroad Topics [Atlantic Coast Line] No. 347, July 28, 1930. 4 p. Pub. by Atlantic Coast Line Railroad Company, Wilmington, N. C. *Apply.*

A Study of the Economic Effect of Reductions in Freight Rates on Export Wheat—1929. A resumé of this Bulletin was published in the *Railway Age* of July 26, 1930, p. 167-168.

Special Series Bulletin No. 55. 45 p. Pub. by Bureau of Railway Economics, Washington, D. C. *Apply.*

A Study of Slip Lines, Strain Lines and Cracks in Metals Under Repeated Stress, by Herbert F. Moore and Tibor Ver. A descriptive, micrographic and tabular record of an effort to find out what takes place in the structure of metals as they are undergoing "fatigue" or the early stages of failure under stress. Embraces various steels, Armco iron, brass, Monel metal and Duralumin. Bulletin No. 208, Engineering Experiment Station, University of Illinois, Urbana, Ill. 62 p. $0.35.

Tension Tests of Rivets, by Wilbur M. Wilson and William A. Oliver. Report of a series of tests to determine the strength of structural rivets in resisting longitudinal tension and indicating that the use of rivets in tension under certain conditions is justified. Bulletin No. 210, Engineering Experiment Station, University of Illinois, Urbana, Ill. 38 p. $0.25.

Zur Frage der Bewertung von Holz-und Eisenschwellen (On the Use of Wood and Steel Ties), by Dr. Diehl. A comparison of the life of wood and steel ties based on a study of the service records of German railways. Also a discussion of physical properties as affecting riding quality, strength, holding power, etc. 58 p. Pub., in German, by Verein Deutscher Ingenieure, Berlin, Germany.

Periodical Articles

The Bavarian Zugspitze Railway. Illustrated description of rack railway which reaches the height of 8,600 feet, and was officially opened early in July. Modern Transport, July 19, 1930, p. 13-14.

Business on the Pacific Coast, by Paul Shoup. Survey of present conditions with some comparison with 1907 and 1908 with regard to railway earnings. Editorial comment, p. 27-28. Review of Reviews, August 1930. p. 66-68.

Les Dispensaires Créés à Bordeaux et à Toulouse par la Compagnie des Chemins de Fer du Midi, by Dr. Maurice Riviére. Description of the buildings and staffs provided and of the work in preventive medicine as well as in accident cases undertaken by the Midi Railway in 1925. Revue Générale des Chemins de Fer, July 1930, p. 3-21.

International Settlements—The Relationship of Politics and Economics in the Efforts to Liquidate the War, by Owen D. Young. "Economic integration of the world is a necessary prerequisite to effective political co-operation in the world. . . " p. 747. Address at Charter Day exercises at the University of California, Mechanical Engineer, August, 1930, p. 743-747.

Railway Amalgamation and Its Effect on the Workshops, by E. J. H. Lemon. A paper before the Institute of Transport at Glasgow describing the problems of reorganization of the shops of the various companies that were consolidated to form the London, Midland & Scottish Railway, to provide for maintenance and repairs of passenger and freight equipment. The discussion, by Sir Josiah Stamp, C. E. R. Sherrington, and others goes into costing, psychological aspects, labor and changed methods, effect of super-luxury trains, and other phases. Modern Transport, July 19, 1930, p. 25-29.

Reorganization of the Light and Heavy Repairs of Goods Vehicles on the Belgian Railways, by M. Warte. The discussion of methods inaugurated with success in 1929 is prefaced by an outline of the nature and amount of traffic, turn-around time of equipment, (4.6 days in 1928), switching, heavy traffic seasons, rolling stock used, and a summary of the old organization. Bulletin of the International Railway Congress Association, July 1930, p. 1653-1670.

The Taplins Aren't Pennsy Men or Mellon Men—Just Taplin Men. "Big business runs to brothers in the lower Lakes region." Sketch of the Taplin brothers. The Business Week, July 23, 1930, p. 16, 18.

A Track-Lining Chantey. "The air and chorus are used by Negro railroad workers. . . " Contribution to Americana. Atlantic Monthly, August, 1930, p. 281.

Union Stations for Freight, by Howard S. Cullman. "The theory of universal inland stations is like that of the post-office system. A letter destined, let us say, for Washington, is dropped in any mail box in New York, and not in a special place where all mail for Washington must be brought . . . Following this same theory, universal inland stations will be general post offices and sorting rooms for less than carload lots of freight." Review of Reviews, August, 1930, p. 76.

Looking Backward

Fifty Years Ago

The Gulf, Colorado & Santa Fe completed its line from Galveston, Tex., to Brenham, 126 miles, on August 2, and on the same date completed a trackage agreement with the International & Great Northern, providing it with an entrance into Houston, Tex., from Arcola.—*Railway Review,* August 7, 1880.

The Atlantic, Mississippi & Ohio [now the Norfolk & Western] will be sold at Richmond, Va., on November 1 under a decree of the United States Circuit Court. The sale will include the entire property of the company, 428 miles in all, with the main line extending between Norfolk, Va., and Bristol, Tenn., 408 miles.—*Railroad Gazette,* August 6, 1880.

Twenty-Five Years Ago

Stephen E. Cotter, superintendent of the Middle division of the Wabash at Decatur, Ill., has been promoted to general superintendent.—*Railroad Gazette,* August 11, 1905.

A. P. Prendergast has been appointed assistant master mechanic on the Baltimore & Ohio at the Mount Claire shops, Baltimore, Md.—*Railway and Engineering Review,* August 12, 1905.

The general strike and lockout of the operators, members of the Order of Railway Telegraphers, inaugurated simultaneously on the Northern Pacific and the Great Northern on July 31, is now in its second week, with no indication of settlement. Immediately after the walkout trains had to be run for a time chiefly by schedule, without orders. The strike order did not include dispatchers, but if members of the brotherhood they are forbidden to do the usual work of telegraph operators.—*Railway Age,* August 11, 1905.

Ten Years Ago

For the week ending July 16 the total accumulation of cars on hand in excess of current movement was reduced for the first time below the total for the week ending April 3, before the strikes began, to 92,700. On July 2 this figure was reported at 129,278. The car shortage report also shows a gratifying decrease. For the week ending July 1 the deferred car requisitions were 130,670, but for the week ending July 15 the number had been reduced to 115,872.—*Railway Age,* August 6, 1920.

As a step in the direction of promoting freight efficiency, the Interstate Commerce Commission, acting in response to suggestions made by the railroads, on July 31 issued a special permission order authorizing the roads to file tariffs prohibiting more than one reconsignment of freight in open top cars, or of coal and coke in any kind of cars. It provides for charges ranging from $2 to $5 a car for reconsignments allowed under the order, and for a $10 per car per day emergency penalty charge for the detention beyond the free time of open top cars and all cars loaded with coal or coke or lumber while being held for reconsignment.—*Railway Age,* August 6, 1920.

General increases in freight and passenger rates, which it is estimated should produce an increase in revenues of approximately $1,550,000,000 if applied to intrastate as well as interstate traffic were authorized by the Interstate Commerce Commission in an order dated July 29 and made public on July 31. The increases are intended to be sufficient to enable railroads to pay the increases in wages recently awarded by the Railroad Labor Board, and to increase the net operating income of the carriers to 6 per cent on a valuation of $18,900,000,000, or $1,134,000,000 a year. The decision was rendered in about three months after the filing of the original application. The commission allows the 20 per cent increase in passenger and baggage rates and the 50 per cent surcharge for Pullman passengers proposed by the roads.—*Railway Age,* August 6, 1920.

Odds and Ends of Railroading

Still Another Young Veteran

CHICAGO.

TO THE EDITOR:

The writer is 36 years old (born January 6, 1894) and has been in the accounting department of the Chicago & North Western since October 15, 1909, with a continuous service record of 20 years and 8 months. Perhaps I am in the running as the "Youngest Veteran."

P. J. SESTERHENN,
Assistant General Bookkeeper, Chicago & North Western.

Italian Laborers

The present generation of railroaders is accustomed to think of Italian section laborers as an institution of long standing. In this connection, however, the use of Italians as section laborers is not of such a great age. Mark Twain, the famous author of a generation or two ago, visited the Neckar valley in Germany in 1879, and expressed great surprise at finding Italians employed in the construction of a new railway. He says: "In our country, the railroads do not employ them. We regard Italians as musicians and fruit peddlers, not as railroad laborers."

Helping Out

An extremely sympathetic spirit was displayed recently by the employees of the freight claim department of the Baltimore & Ohio. Because of serious illness, Mrs. J. D. Gill, wife of the head clerk, required blood transfusions. Twenty of the girls in the office offered their services, and Miss Ada Kellenberger was finally selected. Later, another transfusion was necessary, and this time it was Reuben Gnau of the freight claim office who gave his blood. This is the second time Gnau has undergone blood transfusions in the interest of fellow workers.

Untraveled

"Never been nowhere nor seen nothin'," was the conclusion drawn by Conductor Stevens after an encounter with a young fellow who boarded a train at Rogers, Ark. Calling for the youth's ticket, the conductor was told that it had been "put in the slot" at the head of the train. So the conductor hied him to the mail car and asked of the clerk on duty if a Rogers-to-Little Rock ticket was in the mail chute—and it was. The boy had probably never been aboard a train before, but had been told of "pay as you enter" cars, and, seeing other people mailing letters on the train, had concluded that was the proper place for his ticket.—Paris (Tex.) News.

Toot, Toot, But Not for Boo-Boo

There was a lot of whistling on the Long Island Railroad in Brooklyn recently and Boo-Boo, a milk-wagon horse, was the cause of it all. While his driver tarried, Boo-Boo, milk-wagon in tow, wandered on to the railroad tracks and up an incline where a trestle halted him. Then a locomotive stopped only inches from his nose. Boo-Boo stared blankly while the engineer whistled for him to move. Finally a policeman arrived, but half an hour had elapsed before Boo-Boo could be backed down the incline, a painstaking process because of danger from the highly-charged third rail. A string of six trains, delayed by Boo-Boo's walk, whistled angry salutes at him when they again got under way.

A Royal Engineman

Boris of Bulgaria not only wants to be king of his country, but king of enginemen as well. Mostly, he enjoys the pleasures of engine driving incognito, usually on the Barna Express, the fastest train in his kingdom. Recently, he drove this train into Plevna, two minutes late. The stationmaster immediately came over and bawled him out, not having the faintest idea as to who he was. The king took it all in good part, but a bystander, who recognized King Boris, despite his dirty face, broke into horrified protest. The stationmaster gasped and apologized, but, as he walked away, he was heard to mumble into his beard, "King or no king, he had no business bringing the Barna Express in here late."—Berlin (Germany) Nachtausgabe.

Who Did Build the First Sleeping Car?

MONTREAL, QUE.

TO THE EDITOR:

In the answers to 50 questions on railroading which appeared in the *Railway Age*, Mr. Pullman was given credit for making the first sleeping car. A few years back the Canadian National Magazine, in an article on the old Great Western Railway, made the claim that Samuel Sharpe, when he was master mechanic and car builder of the G. W. R., invented the sleeping car before the first Pullman came out and that two such cars built by him in 1857 were run by the G. W. R. between the Niagara Frontier and Detroit. Perhaps some of the "old timers" who read *Railway Age* could throw some light on the matter.

W. E. BELL,
Chief of Standard Time Service, Canadian National.

Movies—Monumental and Talking

CHICAGO.

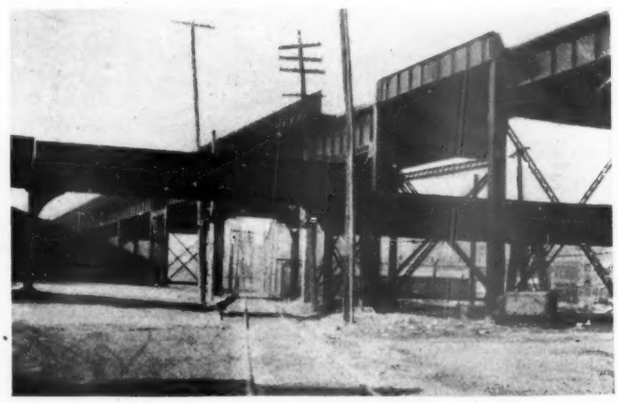
TO THE EDITOR:

In the June 28 issue, under the heading "Moving Monuments," mention is made of a car "Lindbergh" operated on the Pennsylvania, and of five other living men in the United States whose names are on the Great Northern's Empire Builder. The Milwaukee has operated a parlor car for the past three years between Minneapolis, Minn., and St. Paul and Chicago named "Lindbergh" in honor of Col. Charles A. Lindbergh.

The all-talking spectacular railroad drama "The Record Run" featuring Jean Arthur, Louis Wolheim and Robert Armstrong and depicting the life of a railroad man on a transcontinental road was filmed on the Milwaukee, between Miles City, Mont., and Chicago. Approximately 100 people spent more than 30 days on this railroad under Director George B. Seitz.

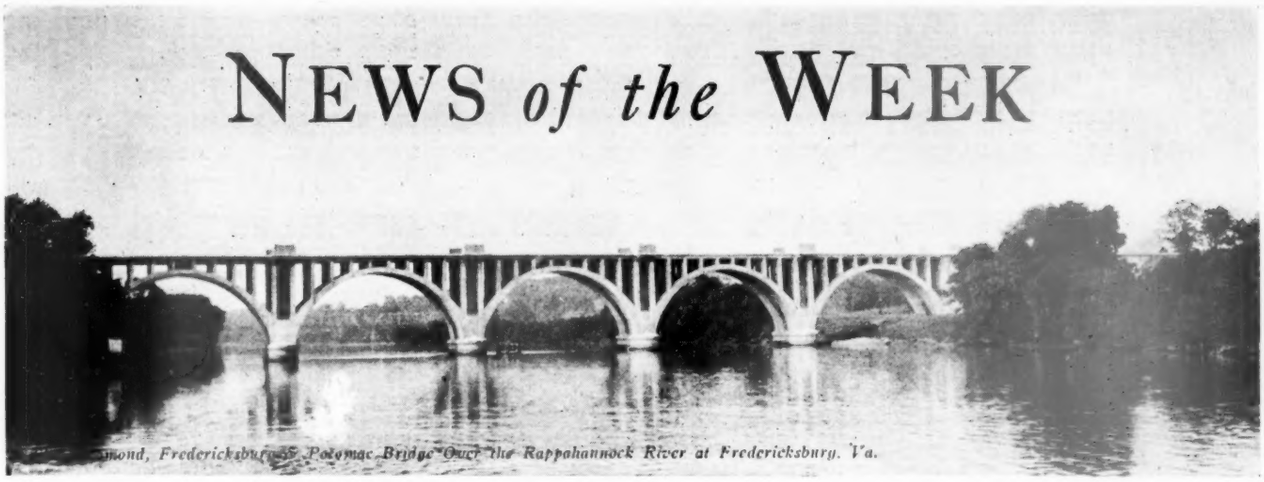
F. H. JOHNSON,
Executive Assistant, Chicago, Milwaukee, St. Paul & Pacific.

* * *



Another three-level railway crossing, at Richmond, Va. The track at the top is that of the Atlantic Coast Line, in the middle the Seaboard Air Line, and on the ground the Southern. If there are other multiple crossings of more than two levels, we should be pleased to learn of them.

NEWS *of the* WEEK



...mond, Fredericksburg & Potomac Bridge Over the Rappahannock River at Fredericksburg, Va.

A GENERAL REDUCTION of $6 has been made by the American Telephone & Telegraph Company on all telephone calls between North and South America. With the new schedule of rates, the cost of a conversation between New York and Buenos Aires is now $30 for the first three minutes and $10 for each additional minute, instead of the former rates of $36 and $12 respectively. Zone charges, for calls between more distant points on the two continents, remain the same as at the inauguration of the service on April 3. The intercontinental service, which is available daily from 9 a.m. to 6:30 p.m., New York time, provides connection with practically all telephones in Argentina, and with those in Montevideo, Uruguay, and nine cities in Chile.

Medal for T. W. Malone

President Hoover, acting on the recommendation of the Interstate Commerce Commission and its committee, has awarded a medal of honor to Thomas W. Malone, of Quincy, W. Va., a yard clerk on the New York Central, who rescued a woman who had stepped in front of a locomotive. The medal is in recognition of Mr. Malone's action at Belle, W. Va., near Charleston, on December 16, last.

Application for a medal in this case was filed by the president of the New York Central. This is the thirty-fifth medal of this character awarded under the law of 1905.

Attention, Operators!

The time-honored Morse telegraph system seems to be hastening to the end of its career, as a national institution, but the Morse operator, with his "Morse fist"—a good many of him—still flourishes in the railroad world; and the Railroad Man's Magazine proposes to bring him into prominence by calling attention to his peculiar abilities as a penman. The modern operator does, indeed, very generally use a typewriter; but the magazine offers a prize of a silver plaque for the best example of a telegraph operator's penmanship, open to all operators or former operators. On the plaque will be engraved a specimen of the winner's handwriting, together with his name and the date of the award. A bronze plaque will be given under similar circumstances as a second prize and a copper plaque as a third prize. The competition will close on October 1 and the magazine will appoint a board of judges.

Fewer Accidents at Highway Crossings

There were fewer accidents at highway grade crossings in the first four months of 1930 than in any corresponding period since 1925, and there were also fewer fatalities and persons injured, according to reports filed by the railroads with the Interstate Commerce Commission. And this in the face of the fact there has been an increase of 33 per cent in the number of automobiles in use.

These accidents totaled 1,643 for the four months ending with April. In 1925 there were 1,467. Fatalities totaled 643; in 1925 there were 587; persons injured totaled 1,908 this year compared with 1,660 in 1925.

The Canadian Roads in June

The earnings statement of the Canadian Pacific, for the month of June, is the best showing of the current year to date, gross at $15,530,841 and net at $2,820,-082 being well ahead of any preceding month in 1930. Moreover, a reduction in operating expenses in that month almost equivalent to the decline in gross has left the net earnings for the month only slightly below those of June last year.

For the six months, gross revenues were $83,134,974, as compared with $101,646,751 in the like month of 1929. Operating expenses at $73,728,920 compare with $85,289,920 in the preceding year, leaving operating net for the six months of 1930 at $9,406,054, against $16,-356,831 in 1929, a reduction of $6,950,776.

The following statement shows gross revenues, expenses and net expenses and net earnings for the month of June, with comparisons:

	JUNE		
	1930	1929	Decr.
Gross	$15,530,841	$18,322,596	$2,791,754
Exp.	12,710,759	15,329,671	2,618,912
Net	$2,820,082	$2,992,925	$172,842
	SIX MONTHS ENDING		
	June, 1930	June, 1929	Decr.
Gross	$83,134,974	$101,646,751	$18,511,776
Exp.	73,728,920	85,289,920	11,561,000
Net	$9,406,054	$16,356,831	$6,950,776

Operating expenses of the Canadian National for the month of June were decreased by $3,248,990, as compared with June, 1929. Gross revenues for the month totaled $19,405,728, as compared with $23,016,481; operating expenses were $17,160,860, as against $20,409,850.

Net operating revenue was $2,244,867, as compared with $2,606,630. The operating ratio was 88.43 per cent as compared with 88.67 per cent.

These figures include the Central Vermont, but not the Canadian National lines in the Maritimes. The aggregate of gross revenues to June 30 was $109,-311,988, as compared with $130,843,819 in 1929; operating expenses, $98,002,775, as against $109,138,048; and net revenue $11,309,212, as compared with $21,705,770.

Government Sues Northern Pacific for Lands

The Department of Justice on August 1 filed in the federal district court for the eastern district of Oregon, at Spokane, a bill of complaint involving questions as to the respective rights of the United States and the Northern Pacific growing out of grants of public lands made by Congress in 1864 and 1870 to aid in the construction of a railroad and telegraph line from Lake Superior to Puget Sound. The grants embraced approximately 40,-000,000 acres, excepting mineral lands and lands otherwise appropriated, and the Northern Pacific claims the right to approximately 4,000,000 acres of additional lands under the indemnity clause, including some lands within national forests.

After an extensive investigation of the administration of these land grants by a joint committee of Congress, an act was passed in June, 1929, removing lands within existing forest reservations from the operations of the grant, with provision for compensation to the railroad company.

In its bill of complaint the government takes the position that as a result of violations of the legislative contracts on the part of the railroad company the right of any additional lands has been lost and the government is entitled to have the title to its lands quitted against the claims made by the railroad company.

(Continued on page 298)

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1930

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Akron, Canton & Youngstown	June	171	$227,958	$115	$237,494	$38,750	$20,370	$15,406	$64,688	$19,469	$158,604	66.8	$78,890	$61,756	$37,057	$121,946
	6 mos.	171	1,458,288	648	1,513,740	242,922	145,817	87,626	418,949	111,504	997,232	65.9	516,508	407,359	266,448	598,587
Atchison, Topeka & Santa Fe	June	9,630	10,568,675	2,870,509	14,813,755	2,305,147	2,832,761	437,533	4,540,945	448,869	10,537,957	71.1	4,275,798	2,905,291	2,856,018	5,841,405
	6 mos.	9,630	64,152,738	15,434,933	88,163,204	16,427,722	19,910,734	2,567,286	28,591,225	2,751,632	70,129,647	79.5	18,033,557	11,205,812	10,830,339	23,576,225
Gulf, Colorado & Santa Fe	June	1,942	1,685,351	142,030	1,945,274	227,345	385,865	61,125	611,140	72,024	1,355,014	69.7	590,260	495,335	359,282	158,075
	6 mos.	1,943	9,899,579	830,487	11,482,222	3,014,943	2,818,816	345,352	3,925,614	455,469	10,467,223	91.2	1,014,999	436,664	—411,362	872,416
Panhandle & Santa Fe	June	1,569	1,323,446	82,077	1,492,137	231,947	258,931	22,362	361,027	39,685	909,938	61.0	582,199	530,003	407,224	312,836
	6 mos.	1,569	6,529,743	487,594	7,499,353	2,256,050	1,730,864	120,410	2,296,190	241,164	6,574,660	87.7	924,693	610,380	—142,906	1,165,735
Atlanta & West Point	June	93	119,726	46,747	194,164	20,265	36,035	12,233	79,622	11,700	164,619	84.8	29,545	19,516	8,924	10,892
	6 mos.	93	830,916	251,679	1,250,452	152,419	225,155	73,230	490,133	71,718	1,041,518	83.3	208,934	127,135	51,406	98,409
Western of Alabama	June	133	125,977	49,001	196,274	22,216	43,493	12,804	71,312	12,575	166,473	84.8	29,801	18,455	24,664	23,742
	6 mos.	133	969,417	269,425	1,373,269	188,911	275,204	75,603	467,261	77,748	1,109,009	80.8	264,260	174,943	178,894	157,376
Atlanta, Birmingham & Coast	June	639	247,445	16,680	298,563	77,097	72,398	28,186	142,719	19,250	349,789	117.1	—51,226	—66,201	—80,744	—6,498
	6 mos.	639	1,672,203	99,244	2,006,121	512,464	463,310	172,237	897,601	121,794	2,230,939	111.2	—224,818	—315,252	—412,315	—180,300
Atlantic Coast Line	June	5,154	3,379,023	580,391	4,382,870	750,321	1,003,459	158,272	1,795,627	187,263	3,928,540	89.6	454,330	103,053	20,038	746,289
	6 mos.	5,154	25,168,484	7,271,928	35,886,644	5,086,679	6,398,789	1,046,838	12,106,851	1,085,208	26,166,935	72.9	9,719,709	6,578,845	5,761,211	10,416,663
Charleston & Western Carolina	June	342	216,254	7,834	232,030	42,658	32,565	7,653	80,088	6,983	169,936	73.2	62,094	35,622	33,470	22,609
	6 mos.	342	1,371,770	46,385	1,472,618	358,559	226,742	44,191	544,646	43,561	1,217,649	82.7	254,969	136,950	109,973	260,972
Baltimore & Ohio	June	5,658	14,761,386	1,780,207	17,902,603	2,072,406	3,739,847	547,852	5,923,783	717,478	13,196,030	73.7	4,706,573	3,805,562	3,693,677	4,788,077
	6 mos.	5,658	89,661,099	9,565,192	106,444,285	12,433,433	23,398,899	3,256,603	37,559,624	4,176,002	81,915,274	77.0	24,529,011	18,937,912	17,722,855	22,490,840
Baltimore & Ohio Chic. Term	June	85	.....	.....	324,983	61,068	33,397	2,157	155,724	18,469	276,477	85.1	48,506	1,694	105,738	147,830
	6 mos.	85	.....	.....	1,956,228	263,318	261,217	14,670	1,043,866	114,794	1,736,057	88.8	220,171	—125,946	548,287	638,658
Staten Island Rapid Transit	June	23	70,974	144,127	224,989	18,725	23,704	1,895	102,871	14,804	161,999	72.0	62,990	45,990	39,052	43,321
	6 mos.	23	390,817	753,057	1,201,932	101,923	102,262	12,665	612,160	91,975	920,985	76.6	280,947	175,875	134,990	83,583
Bangor & Aroostook	June	619	372,576	29,738	433,816	116,661	94,320	4,977	111,333	28,833	359,094	82.8	74,722	34,085	58,786	132,652
	6 mos.	619	4,447,563	347,963	4,983,921	734,357	765,741	35,920	1,112,540	162,662	2,827,491	56.7	2,156,430	1,739,993	1,688,338	1,359,440
Belt Ry. Co. of Chicago	June	57	.....	.....	541,622	63,785	57,573	5,652	254,660	12,757	394,427	72.8	147,195	92,650	154,657	144,695
	6 mos.	57	.....	.....	3,521,418	367,716	382,744	25,851	1,693,111	72,243	2,541,665	72.2	979,753	663,474	912,721	896,318
Bessemer & Lake Erie	June	227	1,853,308	3,650	1,874,818	154,928	345,440	14,326	324,095	38,662	881,002	46.9	993,816	893,697	855,015	1,214,359
	6 mos.	227	6,303,249	29,839	6,436,828	765,731	1,980,249	85,819	1,602,418	219,505	4,668,953	72.5	1,767,875	1,455,168	1,481,388	2,808,956
Bingham & Garfield	June	33	26,077	.....	26,916	6,341	6,129	1,440	8,239	4,723	26,961	100.2	—46	—5,142	10,731	23,343
	6 mos.	33	190,001	.....	195,135	32,200	48,868	9,553	50,231	29,748	171,307	87.8	23,827	—12,643	85,809	127,755
Boston & Maine	June	2,090	3,671,268	1,118,231	5,678,200	1,080,178	759,281	91,962	1,994,910	219,168	4,172,204	73.5	1,505,996	1,208,792	1,018,300	1,124,724
	6 mos.	2,090	23,294,755	6,895,183	35,030,019	5,926,417	5,611,422	547,850	12,812,319	1,309,875	26,350,816	75.2	8,679,203	7,038,284	5,764,435	6,298,024
Brooklyn Eastern Dist. Term	June	11	105.124	.....	107,097	9,222	11,565	194	36,955	5,710	63,646	59.4	43,451	36,890	36,890	38,001
	6 mos.	11	668,219	.....	681,713	55,146	90,039	3,367	220,538	34,077	403,167	59.1	▪278,546	236,310	236,310	249,032
Buffalo & Susquehanna	June	253	133,499	521	144,915	29,615	30,482	1,952	43,369	7,163	112,581	77.7	32,334	30,259	40,216	13,239
	6 mos.	253	820,499	4,607	892,610	174,644	273,503	12,110	266,091	51,825	778,173	87.2	114,437	113,847	190,464	200,896
Buffalo, Rochester & Pittsburgh	June	601	1,148,902	52,100	1,249,982	234,970	317,403	36,414	480,291	44,129	1,115,171	89.2	134,811	104,763	117,077	250,844
	6 mos.	601	7,180,201	335,517	7,775,931	955,663	2,151,991	225,749	3,025,869	270,454	6,641,748	85.4	1,134,183	904,042	990,968	1,493,310
Burlington-Rock Island	June	367	130,734	4,520	142,424	139,877	30,209	6,422	70,868	13,575	235,417	165.3	—92,993	—100,810	—129,008	—81,234
	6 mos.	367	785,200	28,702	861,408	785,499	180,521	38,350	427,824	76,864	1,427,789	165.8	—566,381	—614,685	—776,916	—273,493
Canadian Pacific Lines in Maine	June	233	92,061	29,329	134,614	83,984	43,419	8,468	74,056	5,064	214,993	159.7	—80,379	—94,879	—121,529	—72,877
	6 mos.	233	1,217,576	194,063	1,504,179	338,749	330,524	45,280	621,345	27,134	1,363,032	90.6	141,147	54,147	—74,846	—50,979
Canadian Pacific Lines in Vermont	June	85	84,045	35,356	143,947	21,179	30,023	2,172	81,893	3,915	139,182	96.6	4,765	745	—30,698	—9,276
	6 mos.	85	625,896	173,490	931,600	175,426	210,561	11,768	544,137	16,252	958,090	97.2	—26,490	—50,610	—235,560	—197,325
Central of Georgia	June	1,944	1,265,997	217,594	1,621,252	210,062	327,519	73,372	704,668	82,835	1,402,750	86.5	218,502	100,779	127,856	237,394
	6 mos.	1,944	8,389,771	1,610,129	11,193,865	1,327,373	2,044,270	413,721	4,467,374	503,367	8,841,154	79.0	2,352,711	1,618,008	1,647,721	2,105,361
Central New Jersey	June	692	3,201,165	725,023	4,207,433	422,638	884,598	57,706	1,643,345	129,294	3,163,197	75.2	1,044,236	525,850	417,930	658,581
	6 mos.	692	20,414,938	4,029,195	26,137,705	2,649,158	5,857,133	367,376	10,247,480	802,149	20,084,057	76.8	6,053,648	3,806,862	3,033,231	3,888,206
Central Vermont	June	458	512,947	95,380	688,146	175,929	103,061	19,753	256,590	23,312	580,685	84.38	107,461	90,701	106,971	113,887
	6 mos.	467	2,993,797	494,633	3,874,326	710,367	640,575	109,484	1,660,876	155,008	3,288,095	84.87	586,231	489,407	599,320	814,217
Chesapeake & Ohio	June	3,087	10,311,805	512,593	11,351,427	1,494,457	2,228,341	163,341	2,866,059	389,692	7,166,455	63.1	4,184,972	3,359,355	3,299,786	3,590,002
	6 mos.	3,087	62,100,652	2,929,054	68,052,114	9,783,474	14,560,483	990,986	17,500,851	2,076,800	45,052,219	66.2	22,999,895	18,045,951	18,325,534	19,579,612
Chicago & Alton	June	1,028	1,454,993	359,950	2,017,746	325,355	530,624	84,853	760,239	59,506	1,780,423	88.2	237,323	123,478	—60,922	267,864
	6 mos.	1,028	8,709,663	2,293,223	12,315,130	1,592,203	3,061,040	462,819	4,784,352	419,987	10,429,235	84.7	1,885,895	1,203,186	103,192	1,404,055
Chicago & Eastern Illinois	June	946	1,208,819	204,516	1,560,169	225,721	403,314	79,659	681,333	74,982	1,478,718	94.8	81,451	—49,084	—211,157	84,424
	6 mos.	946	7,978,114	1,367,237	10,267,354	1,347,942	2,337,898	491,732	4,347,424	433,407	9,006,381	87.7	1,260,973	506,812	—446,172	682,222

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Chicago & Illinois Midland	June	131	$201,362	$3,484	$212,552	$21,737	$43,366	$19,738	$60,607	$33,303	$178,396	83.9	$34,156	$25,821	$23,954	$16,395
	6 mos.	131	1,394,139	31,976	1,484,943	170,878	328,810	125,931	445,064	152,931	1,221,949	82.3	262,994	212,982	186,810	233,852
Chicago & North Western	June	8,458	8,240,423	2,049,587	11,633,149	1,966,083	2,295,471	278,700	4,043,306	399,517	9,013,256	77.5	2,619,893	1,944,374	1,761,807	3,075,698
	6 mos.	8,458	47,070,933	9,901,579	64,201,034	9,203,506	13,806,397	1,346,768	25,491,529	2,307,046	52,312,763	81.5	11,888,271	7,326,143	6,195,784	9,922,930
Chicago, Burlington & Quincy	June	9,325	8,117,791	1,487,618	10,897,419	1,924,136	1,716,181	339,357	3,623,544	360,442	8,067,145	74.0	2,830,274	1,957,813	1,728,806	1,564,466
	6 mos.	9,340	52,425,344	7,555,598	67,646,990	9,355,931	10,314,553	1,897,075	23,601,027	2,242,490	48,022,822	71.0	19,624,168	14,072,532	12,663,223	16,034,348
Chicago Great Western	June	1,495	1,546,449	171,146	1,862,166	359,526	250,962	91,664	700,137	51,333	1,444,527	77.6	417,639	344,980	154,145	184,491
	6 mos.	1,495	9,180,736	1,027,983	11,083,241	1,480,976	1,646,455	510,334	4,555,072	332,230	8,553,844	77.2	2,529,397	2,027,266	1,006,507	662,491
Chicago, Indianapolis & Louisville	June	647	1,008,718	122,451	1,260,344	160,712	206,435	36,988	443,015	35,941	890,383	70.6	369,961	287,112	171,687	283,544
	6 mos.	647	6,133,349	821,101	7,716,757	861,455	1,612,359	233,923	2,880,993	221,132	5,876,838	76.2	1,839,919	1,360,718	634,007	1,181,369
Chicago, Mil., St. Paul & Pacific	June	11,335	9,324,717	1,235,914	11,791,698	2,719,587	2,291,118	386,488	4,203,064	385,725	9,988,597	84.7	1,803,101	974,482	583,689	2,089,496
	6 mos.	11,295	56,375,559	6,402,527	69,861,173	11,431,698	14,710,877	1,984,489	27,261,799	2,311,317	57,922,173	82.9	11,939,000	7,116,065	4,959,407	10,627,564
Chicago River & Indiana	June	20	.....	.....	486,374	43,000	40,000	1,581	171,952	20,380	276,913	56.9	209,461	191,289	262,705	297,464
	6 mos.	20	.....	.....	3,140,603	298,000	293,600	7,747	1,134,136	110,617	1,844,100	58.7	1,296,503	1,071,818	1,505,446	1,767,018
Chicago, Rock Island & Pacific	June	7,592	7,704,105	1,304,610	9,955,350	1,507,026	1,846,886	206,084	3,555,807	341,609	7,516,080	75.5	2,439,270	1,929,584	1,496,120	1,329,696
	6 mos.	7,592	45,264,753	7,787,608	58,845,113	7,654,618	11,539,086	1,484,067	22,570,070	2,097,108	45,875,135	78.0	12,969,978	9,685,277	6,989,851	7,613,892
Chicago, Rock Island & Gulf	June	566	485,818	57,721	585,038	77,821	52,097	21,955	198,271	20,495	368,754	63.0	216,284	197,459	157,688	180,450
	6 mos.	566	2,645,955	366,055	3,278,975	511,474	340,907	130,134	1,188,074	130,757	2,301,887	70.2	977,088	858,385	623,396	1,047,990
Chic., St. Paul, Minn. & Omaha	June	1,746	1,533,620	316,305	2,021,239	358,083	392,086	41,465	816,387	86,386	1,703,626	84.3	317,613	212,782	152,265	288,191
	6 mos.	1,746	9,504,643	1,628,438	12,097,365	1,724,025	2,391,598	251,210	5,244,557	509,800	10,182,145	84.2	1,915,220	1,277,313	840,380	994,574
Clinchfield R. R.	June	309	446,639	8,553	464,463	56,264	122,030	21,203	105,378	17,220	321,401	69.2	143,062	73,060	105,437	132,653
	6 mos.	309	3,043,707	61,319	3,165,212	367,401	808,557	130,433	683,038	106,160	2,094,852	66.2	1,070,360	650,278	1,038,365	1,303,551
Colorado & Southern	June	1,038	552,049	65,264	685,511	134,905	165,216	17,534	278,897	40,396	641,607	93.6	43,904	—25,992	—41,560	—84,179
	6 mos.	1,038	4,146,197	375,341	4,984,037	784,832	994,784	99,836	1,822,328	259,381	3,973,426	79.7	1,010,611	590,270	463,809	499,132
Ft. Worth & Denver City	June	696	664,985	111,692	837,009	118,243	131,967	24,562	266,331	41,639	585,623	70.0	251,386	206,937	193,779	81,194
	6 mos.	696	3,664,825	654,870	4,684,149	715,543	935,673	125,934	1,565,998	238,835	3,586,837	76.6	1,097,312	860,070	782,433	1,128,125
Wichita Valley	June	271	54,977	2,948	62,884	30,136	5,633	26	28,217	1,714	65,756	104.6	—2,872	—9,944	—31,991	—8,795
	6 mos.	271	388,787	18,680	436,939	148,903	35,922	164	179,520	9,446	370,298	84.7	66,641	24,001	—92,190	77,942
Columbus & Greenville	June	167	103,257	10,811	121,579	36,913	21,666	3,995	43,899	11,429	117,902	97.0	3,677	2,675	239	7,055
	6 mos.	167	700,117	83,604	833,922	198,516	121,681	25,225	297,571	71,057	711,736	85.4	122,186	96,746	80,925	53,490
Conemaugh & Black Lick	June	20	85,489	.....	136,499	11,886	17,735	630	69,094	3,888	103,233	75.6	33,266	32,266	36,396	58,942
	6 mos.	20	442,292	.....	830,689	70,919	139,104	6,256	484,998	22,631	723,908	87.1	106,781	100,781	117,070	157,645
Delaware & Hudson	June	881	2,581,197	217,503	3,017,118	468,225	745,540	59,608	1,066,216	151,832	2,495,915	82.7	521,203	397,781	401,440	713,727
	6 mos.	881	16,149,913	1,246,729	18,645,923	2,707,324	4,539,637	350,340	6,916,521	982,855	15,529,894	83.3	3,116,029	2,377,174	2,339,300	3,352,586
Delaware, Lackawanna & Western	June	998	4,098,173	888,398	5,768,909	591,949	1,057,184	162,411	2,264,107	173,087	4,288,722	74.3	1,480,187	965,109	973,219	1,312,843
	6 mos.	998	25,464,498	4,992,466	34,915,803	3,444,601	6,732,808	888,497	14,582,005	1,067,112	26,956,397	77.2	7,959,406	5,036,738	5,025,259	7,885,394
Denver & Rio Grande Western	June	2,561	1,747,866	271,211	2,204,740	322,159	441,137	62,895	641,218	88,951	1,587,863	72.0	616,877	451,821	465,132	565,563
	6 mos.	2,561	11,435,310	1,191,702	13,656,570	1,914,454	2,920,139	351,115	4,259,199	549,406	10,103,623	74.0	3,552,947	2,506,824	2,656,095	3,469,441
Denver & Salt Lake	June	232	156,386	11,339	183,316	72,603	54,515	2,267	36,120	11,987	173,866	94.8	9,450	—7,550	2,670	—19,291
	6 mos.	232	1,200,992	86,220	1,379,555	290,271	364,349	14,532	246,984	103,669	1,009,909	73.2	369,646	279,554	328,949	517,944
Detroit & Mackinac	June	241	81,061	7,042	99,462	41,070	15,289	1,870	34,955	11,355	97,123	97.6	2,339	—6,230	—6,759	82,344
	6 mos.	257	439,658	45,631	535,123	131,411	114,194	13,656	213,896	50,167	503,684	94.1	31,439	—8,797	—8,449	155,240
Detroit & Toledo Shore Line	June	50	276,734	.....	280,966	49,168	32,487	7,646	66,682	35,971	191,925	68.3	89,041	73,039	24,456	34,486
	6 mos.	50	2,135,884	.....	2,164,697	222,988	208,773	46,661	538,699	79,129	1,096,101	50.6	1,068,596	899,148	490,581	620,530
Detroit Terminal	June	19	.....	.....	110,786	19,405	10,450	.....	68,710	4,381	102,946	92.9	7,840	—5,761	—4,212	52,734
	6 mos.	19	.....	.....	806,777	97,580	79,547	49	408,883	28,889	614,948	76.2	191,829	96,982	101,726	421,901
Detroit, Toledo & Ironton	June	497	891,422	1,546	913,150	132,085	114,125	15,004	231,881	38,766	531,253	58.2	381,897	315,746	288,550	370,870
	6 mos.	503	6,449,782	9,889	6,562,265	828,466	674,088	83,208	1,598,846	211,600	3,390,312	51.7	3,171,953	2,779,925	2,530,626	2,693,847
Duluth, Missabe & Northern	June	568	3,143,264	5,577	3,562,308	384,348	283,266	4,532	517,162	41,829	1,231,137	34.6	2,331,171	2,056,722	2,055,510	2,521,561
	6 mos.	567	6,895,060	37,868	7,845,886	1,490,078	1,883,225	25,742	1,892,163	270,916	5,562,094	70.9	2,283,792	1,292,417	1,314,546	3,439,564
Duluth, Winnipeg & Pacific	June	178	117,392	11,610	140,417	35,251	38,823	5,161	57,408	7,166	147,220	104.8	—6,803	—13,163	—7,282	24,474
	6 mos.	178	876,956	57,823	983,667	178,627	222,131	31,438	415,259	46,144	911,145	92.6	72,522	22,239	26,530	166,808
Elgin, Joliet & Eastern	June	452	1,733,884	7	1,911,666	281,890	414,112	16,261	718,035	55,926	1,482,503	77.6	429,163	308,351	136,618	507,149
	6 mos.	452	11,148,009	2,298	12,264,473	1,358,068	2,439,428	95,736	4,551,283	324,286	8,760,252	71.4	3,504,221	2,789,631	1,687,659	2,959,959
Erie Railroad	June	2,046	6,548,983	863,998	8,138,046	1,075,511	1,729,901	177,054	3,031,084	296,570	6,347,444	78.0	1,790,602	1,392,503	1,359,152	1,428,999
	6 mos.	2,046	39,166,466	4,681,714	48,064,308	5,694,856	11,331,946	1,093,053	19,038,927	1,822,132	39,212,255	81.6	8,852,053	6,459,017	6,055,699	9,114,434
Chicago & Erie	June	269	917,690	66,466	1,081,961	151,640	158,501	29,298	322,019	41,201	700,150	64.7	381,811	323,659	56,545	141,547
	6 mos.	269	6,129,761	314,741	6,975,773	772,574	820,273	181,784	2,111,052	265,565	4,145,643	59.4	2,830,130	2,481,037	843,077	1,366,363

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
New Jersey & New York	June	45	$24,735	$94,153	$124,135	$19,026	$20,098	$1,416	$58,842	$3,436	$102,818	82.8	$21,317	$14,878	—$15,857	—$6,429
	6 mos.	45	139,589	548,601	717,293	87,671	135,423	10,100	382,679	22,009	637,844	88.9	79,449	51,291	—134,548	—132,605
N. Y., Susquehanna & Western	June	131	317,920	40,700	390,318	54,735	47,695	4,610	161,926	10,817	279,716	71.7	110,602	79,046	52,015	36,171
	6 mos.	131	1,858,748	235,478	2,320,991	285,716	286,951	30,171	1,029,784	72,831	1,705,236	73.5	615,755	426,418	265,259	308,387
Florida East Coast	June	863	331,864	134,747	559,564	166,369	193,368	25,164	246,917	46,138	684,663	122.4	—125,099	—249,160	—342,959	—104,581
	6 mos.	863	4,018,143	2,687,251	7,718,689	972,770	1,225,802	190,022	2,130,489	267,364	4,918,306	63.7	2,800,383	2,032,740	1,544,637	2,351,456
Fort Smith & Western	June	249	86,395	5,932	99,393	21,523	21,171	5,411	36,783	6,302	90,194	90.7	9,199	4,485	—8,073	1,182
	6 mos.	249	574,016	41,979	657,787	129,489	138,972	34,433	240,005	39,711	577,642	87.8	80,145	52,918	—13,863	10,006
Galveston Wharf	June	13	.....	.....	105,904	25,251	6,173	6,788	26,740	7,853	86,050	81.3	19,854	—5,146	—4,491	14,990
	6 mos.	13	.....	.....	719,575	207,619	37,208	26,270	162,554	39,089	548,986	76.3	170,589	20,589	22,735	257,265
Georgia R. R.	June	328	303,024	43,403	375,928	45,006	74,971	22,510	165,087	22,960	330,130	87.8	45,798	37,157	51,012	65,623
	6 mos.	328	1,936,481	256,592	2,377,062	275,821	482,501	136,186	1,046,917	137,352	2,077,250	87.4	299,812	246,579	324,973	451,046
Georgia & Florida	June	501	108,742	4,342	119,366	34,546	21,028	10,375	47,991	10,211	124,372	104.2	—5,006	—13,706	—15,120	1,707
	6 mos.	501	659,120	36,459	740,946	180,772	129,476	59,790	303,451	49,713	724,525	97.8	16,421	—38,906	—40,522	22,802
Grand Trunk Western	June	1,019	1,878,808	206,980	2,257,491	518,832	437,785	72,472	927,417	104,124	2,062,010	91.3	195,481	36,674	—180,669	597,466
	6 mos.	1,019	12,879,547	966,675	14,843,148	2,048,740	2,747,992	442,405	5,970,813	631,582	11,909,170	80.2	2,933,978	2,064,411	1,046,310	3,905,554
Atlantic & St. Lawrence	June	166	94,280	14,656	124,098	39,184	37,058	6,213	75,896	8,870	168,779	136.1	—44,681	—58,994	—102,629	—110,244
	6 mos.	166	814,187	124,274	1,040,905	170,876	263,411	37,387	548,847	52,334	1,082,020	103.9	—41,115	—127,460	—443,769	—567,550
Great Northern	June	8,366	7,236,392	838,956	9,134,188	1,725,053	1,571,214	260,433	2,697,667	235,889	6,599,937	72.3	2,534,251	1,763,933	1,729,328	2,816,439
	6 mos.	8,366	36,331,882	4,578,455	45,736,901	8,233,008	9,542,253	1,562,565	16,516,687	1,449,833	37,760,530	82.6	7,976,371	3,729,614	3,312,197	10,693,384
Green Bay & Western	June	234	139,655	2,781	147,668	29,242	18,790	6,869	53,857	2,619	111,377	75.4	36,291	26,291	16,790	32,397
	6 mos.	234	852,082	17,326	898,139	137,582	130,156	37,325	335,851	17,467	658,098	73.7	240,041	185,981	151,623	129,977
Gulf & Ship Island	June	307	172,317	29,120	218,918	47,508	23,436	4,913	80,247	6,376	165,274	75.5	53,644	21,550	9,063	—43,296
	6 mos.	307	1,129,295	183,275	1,487,118	293,419	249,806	29,105	574,057	41,657	1,207,618	81.2	279,500	86,638	6,266	—39,566
Gulf, Mobile & Northern	June	733	458,588	19,060	500,416	94,434	80,030	24,679	166,467	20,482	386,407	77.22	114,009	85,462	63,111	118,853
	6 mos.	733	2,877,582	140,113	3,154,574	550,467	540,626	189,075	1,023,272	163,963	2,469,266	78.28	685,308	500,952	317,999	593,547
Illinois Central	June	5,018	7,951,168	1,471,991	10,278,875	1,190,537	2,286,094	264,596	3,733,106	365,139	7,911,441	77.0	2,367,434	1,616,742	1,557,362	1,614,294
	6 mos.	5,018	50,960,969	9,302,041	66,030,705	7,929,016	15,320,932	1,622,596	24,808,947	2,209,432	52,402,619	79.4	13,628,086	9,024,300	8,778,272	12,311,312
Yazoo & Mississippi Valley	June	1,705	1,502,440	238,912	1,858,622	278,584	314,480	45,357	719,617	64,848	1,426,367	76.7	432,255	264,136	155,932	—119,823
	6 mos.	1,705	10,098,434	1,449,074	12,336,154	1,838,208	2,140,846	271,853	4,829,477	395,986	9,492,898	77.0	2,843,256	1,836,700	1,243,721	543,231
Illinois Central System	June	6,724	9,453,608	1,710,903	12,137,497	1,469,121	2,600,769	309,953	4,452,723	430,229	9,338,245	76.9	2,799,252	1,879,608	1,712,024	1,494,383
	6 mos.	6,724	61,109,482	10,767,376	78,433,203	9,767,224	17,482,949	1,894,449	29,673,112	2,606,216	61,953,074	79.0	16,480,129	10,914,444	10,025,437	12,856,811
Illinois Terminal	June	519	444,424	90,576	566,548	81,678	75,990	18,702	195,813	42,451	411,954	72.71	154,594	121,910	86,421	134,940
	6 mos.	519	2,806,708	637,772	3,628,998	419,900	470,722	114,433	1,277,903	242,692	2,516,706	69.35	1,112,292	956,688	698,642	826,416
Kansas City Southern	June	784	1,210,743	77,006	1,430,473	186,262	253,366	63,902	433,765	79,114	1,020,893	71.4	409,580	324,802	260,575	305,953
	6 mos.	784	7,254,727	429,143	8,544,613	972,726	1,495,223	377,711	2,615,524	487,350	5,971,004	69.9	2,573,609	1,919,529	1,572,599	1,761,980
Texarkana & Ft. Smith	June	99	208,280	5,618	238,159	27,021	20,082	9,670	57,018	10,597	127,730	53.6	110,429	94,699	50,040	50,290
	6 mos.	99	1,120,500	33,499	1,275,460	168,695	136,102	52,500	338,323	71,135	781,519	61.3	493,941	399,771	213,451	462,831
Kansas, Oklahoma & Gulf	June	326	251,146	1,527	256,945	33,397	23,684	17,598	58,581	13,813	147,053	57.2	109,892	91,634	74,111	83,851
	6 mos.	326	1,506,259	12,252	1,546,693	168,432	139,999	96,574	380,925	68,346	853,374	55.2	693,319	570,911	448,850	582,433
Lake Superior & Ishpeming	June	160	300,800	510	352,530	52,081	26,576	645	58,258	5,881	143,423	40.7	209,107	174,684	172,708	233,902
	6 mos.	160	814,131	6,174	937,007	185,422	167,574	3,496	247,670	37,634	641,778	68.5	295,229	123,666	104,881	460,850
Lake Terminal	June	12	.....	.....	107,349	13,062	12,009	.....	45,496	2,872	73,439	68.4	33,910	28,536	23,945	31,376
	6 mos.	12	.....	.....	451,609	78,413	71,723	.....	240,103	14,996	405,235	89.7	46,374	8,875	—17,722	51,225
Lehigh & Hudson River	June	96	173,036	1,097	184,971	25,432	30,028	3,277	63,201	10,353	132,291	71.5	52,680	35,659	20,993	19,077
	6 mos.	96	1,066,345	6,175	1,137,031	162,835	191,611	21,368	413,284	62,577	851,675	74.9	285,356	206,225	113,529	169,175
Lehigh & New England	June	216	412,054	856	419,566	53,420	82,933	5,461	142,680	33,820	318,314	75.9	101,252	88,524	75,588	71,045
	6 mos.	216	2,377,956	5,088	2,416,020	305,797	507,127	43,905	874,372	129,116	1,860,317	77.0	555,703	479,302	454,878	429,419
Lehigh Valley	June	1,361	4,287,942	527,698	5,276,504	638,520	1,044,606	150,392	2,050,194	137,859	4,048,908	76.7	1,227,596	902,483	788,739	930,685
	6 mos.	1,361	25,361,922	2,832,862	30,733,735	2,760,177	6,884,033	869,974	13,091,997	872,113	24,646,918	80.2	6,086,817	4,308,667	3,705,572	5,741,664
Louisiana & Arkansas	June	608	497,243	22,905	554,488	96,877	81,011	22,648	170,430	29,168	403,402	72.8	151,086	104,985	64,339	78,437
	6 mos.	626	3,366,052	122,176	3,648,336	547,976	628,710	127,279	1,110,280	152,496	2,567,241	70.4	1,081,095	802,433	529,482	552,014
Louisiana, Arkansas & Texas	June	202	66,345	1,993	71,104	25,008	12,114	4,556	35,510	6,629	83,818	117.9	—12,714	—16,714	—26,383	—30,908
	6 mos.	204	439,275	12,010	469,400	144,987	93,021	19,476	226,300	33,536	517,767	110.3	—48,367	—72,448	—146,700	—138,787
Louisville & Nashville	June	5,244	7,401,475	1,048,957	9,061,872	1,522,157	2,304,873	247,946	3,328,119	370,005	7,806,988	86.2	1,254,884	743,123	757,848	1,450,714
	6 mos.	5,247	48,272,692	6,543,020	58,618,002	9,535,388	14,926,705	1,535,506	21,440,487	2,221,076	49,940,345	85.2	8,677,657	5,611,227	5,758,620	8,761,328
Maine Central	June	1,121	1,062,351	272,517	1,501,644	265,490	287,173	17,023	549,774	49,721	1,171,516	78.0	330,128	232,480	221,400	563,582
	6 mos.	1,121	7,700,847	1,330,350	9,852,171	1,477,994	1,813,226	101,217	3,681,219	304,644	7,385,040	75.0	2,467,131	1,886,544	1,539,695	1,679,164

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
						Maintenance of										
			Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Midland Valley	June	363	$236,212	$5,694	$250,236	$39,783	$32,106	$5,611	$56,086	$14,360	$147,449	58.9	$102,787	$87,936	$73,076	$55,905
	6 mos.	363	1,375,262	38,497	1,460,651	197,881	200,500	33,349	385,879	75,761	889,049	60.9	571,602	484,137	392,123	440,964
Minneapolis & St. Louis	June	1,627	935,457	48,062	1,048,219	164,705	192,100	36,882	433,490	43,786	871,448	83.1	176,771	114,248	75,972	162,843
	6 mos.	1,627	5,317,356	309,138	6,006,933	838,915	1,267,762	227,762	2,868,667	264,937	5,467,915	91.0	539,018	169,801	—97,020	218,177
Minneapolis, St. Paul & S. S. Marie	June	4,374	2,869,985	321,803	3,521,879	586,885	638,959	85,662	1,227,068	114,596	2,684,781	76.2	837,098	610,641	460,290	877,399
	6 mos.	4,405	15,582,871	1,613,713	18,784,133	3,048,813	4,092,100	488,607	7,595,471	757,054	16,081,875	85.6	2,702,258	1,346,607	506,255	2,935,675
Duluth, South Shore & Atlantic	June	573	279,019	29,443	343,013	99,146	62,788	8,233	134,220	11,056	317,886	92.7	25,127	—15,699	—21,119	30,427
	6 mos.	573	1,710,296	207,627	2,063,486	360,460	394,062	50,011	874,661	63,863	1,755,896	85.1	307,590	107,418	38,621	170,989
Spokane International	June	165	60,206	7,167	74,460	17,015	7,798	2,953	26,248	5,578	60,008	81.4	13,852	8,802	2,681	24,614
	6 mos.	165	374,890	38,693	450,015	100,530	46,316	20,673	169,624	36,749	379,597	84.4	70,418	39,876	7,927	84,251
Mississippi Central	June	150	79,412	4,661	87,779	16,647	20,224	9,745	30,125	8,010	84,748	96.5	3,031	—276	—772	16,071
	6 mos.	150	636,942	29,697	691,085	105,276	143,674	59,923	201,737	50,769	561,376	81.2	129,709	90,187	91,799	166,334
Missouri & North Arkansas	June	364	112,496	5,516	125,153	29,819	16,391	9,473	48,637	8,357	112,677	90.0	12,476	10,036	—1,107	—22,661
	6 mos.	364	775,194	37,718	860,681	182,821	96,464	57,160	327,712	47,730	712,806	82.8	147,875	133,234	52,241	—22,952
Missouri-Illinois	June	202	145,030	1,337	149,010	23,999	30,752	3,121	45,430	7,301	110,480	74.1	38,530	29,783	21,642	72,726
	6 mos.	202	893,834	10,545	924,036	147,453	199,097	20,911	278,909	41,682	686,850	74.3	237,186	197,033	148,271	253,708
Missouri-Kansas-Texas Lines	June	3,188	2,883,754	435,336	3,624,045	558,851	543,116	131,013	1,135,893	168,347	2,547,336	70.3	1,076,709	839,511	610,195	1,022,206
	6 mos.	3,188	16,966,764	2,660,378	21,560,996	3,039,200	3,889,370	747,991	7,217,958	1,039,781	15,998,990	74.2	5,562,006	4,235,592	2,951,211	4,912,375
Missouri Pacific	June	7,450	7,840,209	882,671	9,627,158	1,785,427	1,759,315	281,818	3,278,854	361,035	7,455,772	77.5	2,171,386	1,751,746	1,401,112	1,454,355
	6 mos.	7,451	49,448,407	5,520,094	60,233,503	9,279,908	10,661,505	1,826,429	21,747,247	2,338,762	45,835,498	76.1	14,398,005	11,762,719	9,321,700	9,463,512
Gulf Coast Lines	June	1,026	974,095	100,234	1,140,136	238,339	242,921	45,753	250,198	58,086	832,519	65.14	307,617	259,442	204,734	177,671
	6 mos.	1,026	7,674,985	770,319	8,954,676	1,476,821	1,454,362	282,284	2,279,690	378,403	5,832,935	70.99	3,121,741	2,831,035	2,138,129	1,485,265
International-Great Northern	June	1,159	913,629	154,881	1,181,025	212,164	209,868	39,381	506,754	68,005	1,049,026	88.82	131,999	88,186	26,710	145,970
	6 mos.	1,159	5,896,801	892,808	7,573,579	1,273,435	1,439,591	265,333	3,250,695	427,568	6,694,607	88.39	878,972	618,103	59,310	790,691
San Antonio, Uvalde & Gulf	June	318	129,545	17,556	156,491	37,887	19,243	6,226	46,893	7,694	117,922	75.4	38,569	34,039	7,056	—8,580
	6 mos.	318	785,805	96,619	969,078	238,176	110,479	37,195	246,181	46,829	673,227	69.5	295,851	267,372	105,336	126,792
Mobile & Ohio	June	1,159	1,069,913	60,910	1,192,958	206,013	238,227	58,595	450,262	47,468	999,655	83.8	193,303	103,767	38,185	263,399
	6 mos.	1,159	6,681,634	398,376	7,499,560	1,132,816	1,439,367	342,367	2,872,220	302,190	6,073,304	81.0	1,426,256	906,714	526,502	1,175,800
Monongahela	June	177	502,597	4,005	510,623	80,000	70,000	1,163	130,036	11,011	287,982	56.4	222,641	204,520	106,656	187,698
	6 mos.	178	3,136,025	37,797	3,200,144	480,000	420,000	7,679	856,500	65,475	1,822,318	56.9	1,377,826	1,273,873	664,464	1,032,057
Monongahela Connecting	June	6	.....	.....	169,961	23,374	34,724	300	71,087	2,699	132,184	77.8	37,777	30,575	24,428	49,507
	6 mos.	6	.....	.....	1,082,879	129,535	205,769	1,827	475,239	16,770	829,140	76.6	253,739	201,837	151,532	286,145
Montour	June	57	236,613	147	237,603	35,932	47,450	1,360	53,736	7,633	146,016	61.5	91,587	89,812	99,095	101,839
	6 mos.	57	1,227,506	297	1,230,962	145,964	308,254	8,284	319,942	46,636	828,985	67.3	401,977	391,327	455,440	406,646
Nashville, Chatt. & St. Louis	June	1,203	1,256,651	173,203	1,572,396	273,093	354,328	79,593	600,748	74,217	1,386,652	88.2	185,744	129,737	118,631	343,280
	6 mos.	1,203	8,072,104	1,203,687	10,188,121	1,575,244	2,180,193	508,061	3,917,660	476,999	8,693,435	85.3	1,494,686	1,113,581	1,078,889	2,410,712
Nevada Northern	June	165	53,457	2,727	63,774	13,372	5,073	1,164	13,787	4,718	38,187	59.6	25,587	17,258	18,964	59,677
	6 mos.	165	351,552	19,888	416,498	76,408	36,338	6,333	90,420	27,700	237,569	57.0	178,929	124,059	126,695	357,508
Newburgh & South Shore	June	6	.....	.....	118,502	19,021	26,783	.....	54,270	6,280	106,354	89.7	12,148	—3,856	—8,636	52,425
	6 mos.	6	.....	.....	722,292	44,851	28,046	.....	339,761	37,257	449,915	62.3	272,377	176,269	186,966	199,362
New Orleans Great Northern	June	264	143,431	14,954	167,677	34,445	36,065	14,413	75,925	12,421	173,269	103.3	—5,592	—20,708	—44,516	35,664
	6 mos.	270	1,349,009	81,306	1,477,933	181,106	262,583	70,058	480,735	65,428	1,057,528	71.6	420,405	327,701	128,717	213,842
New Orleans Terminal	June	20	2,215	.....	154,758	16,610	16,534	.....	50,890	1,627	85,661	55.4	69,097	57,840	68,245	88,934
	6 mos.	20	13,047	.....	852,436	118,172	81,199	.....	336,629	10,195	546,195	64.1	306,241	238,696	248,432	341,357
New York Central	June	11,477	25,368,666	10,900,688	41,626,145	5,870,375	8,511,920	790,128	14,117,477	1,447,391	31,341,517	75.3	10,284,628	7,145,523	6,364,083	9,709,482
	6 mos.	11,477	160,694,204	57,208,010	248,697,298	31,302,316	55,227,817	4,836,102	90,336,706	8,491,776	194,237,415	78.1	54,459,883	36,562,239	32,160,278	51,089,733
Indiana Harbor Belt	June	120	.....	.....	852,450	80,000	94,000	4,750	343,670	30,362	563,774	66.1	288,676	241,090	224,450	308,593
	6 mos.	120	.....	.....	5,577,562	520,000	654,000	30,149	2,396,646	178,314	3,873,179	69.4	1,704,383	1,394,384	1,237,389	1,531,377
Pittsburgh & Lake Erie	June	231	2,246,642	148,401	2,473,517	258,440	776,703	37,841	783,392	84,127	1,940,649	78.5	532,868	372,955	641,461	646,423
	6 mos.	231	12,958,234	941,715	14,368,092	1,546,707	4,387,977	230,672	4,865,910	475,899	11,572,152	80.5	2,795,940	1,840,805	3,538,042	3,827,242
New York, Chicago & St. Louis	June	1,690	3,452,816	199,442	3,817,710	568,063	723,639	128,371	1,351,928	134,650	2,911,539	76.3	906,171	686,623	464,901	898,322
	6 mos.	1,690	22,405,680	974,876	24,297,216	3,136,230	4,738,395	804,375	9,032,792	834,761	18,488,817	76.1	5,808,399	4,595,274	3,235,819	5,411,756
N. Y., New Haven & Hartford	June	2,132	5,279,543	3,737,766	10,220,080	1,711,852	1,521,144	104,732	3,088,159	312,721	6,917,581	67.7	3,302,499	2,638,913	2,081,204	2,806,737
	6 mos.	2,132	32,198,770	21,462,679	60,848,475	8,488,821	9,531,894	621,876	19,708,715	1,932,313	41,438,380	68.1	19,410,095	15,310,415	11,902,681	14,164,925
New York Connecting	June	20	167,570	.....	199,060	29,261	11,497	.....	32,368	1,384	74,510	37.4	124,550	87,550	68,321	107,835
	6 mos.	20	1,138,981	.....	1,303,129	122,108	65,346	.....	202,350	10,921	400,725	30.8	902,404	676,404	523,742	516,401
New York, Ontario & Western	June	568	567,528	139,472	869,743	127,047	184,746	17,975	350,102	32,578	715,263	82.2	154,480	111,915	66,760	122,132
	6 mos.	568	3,683,251	416,081	4,981,518	663,918	1,094,269	105,042	2,294,237	194,453	4,381,934	88.0	599,584	344,136	88,088	73,789

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Norfolk & Western	June	2,240	$7,655,256	$345,434	$8,317,560	$1,082,311	$1,448,988	$136,248	$1,978,531	$261,390	$4,918,961	59.1	$3,398,599	$2,598,540	$2,803,532	$3,722,431
	6 mos.	2,240	47,240,190	2,047,995	51,163,864	6,630,833	9,805,830	776,105	12,443,914	1,524,347	31,275,868	61.1	19,887,996	14,685,665	15,897,071	19,034,062
Norfolk Southern	June	932	659,018	23,883	709,388	88,796	94,867	30,253	245,480	27,514	481,699	67.9	227,689	175,517	138,744	156,442
	6 mos.	932	3,265,682	133,580	3,597,332	503,935	558,023	177,528	1,420,932	167,066	2,819,516	78.4	777,816	463,176	348,182	654,664
Northern Pacific	June	6,783	5,162,513	981,291	6,876,441	1,025,145	1,351,001	313,510	2,278,497	264,628	5,374,825	78.2	1,501,616	810,894	1,103,067	1,134,902
	6 mos.	6,783	30,049,960	3,972,147	37,876,576	5,917,929	8,699,875	1,502,346	14,390,716	1,565,419	32,729,622	86.4	5,146,954	1,070,685	3,005,348	7,197,078
Northwestern Pacific	June	441	300,038	163,414	504,138	107,586	71,930	9,548	211,538	13,766	412,790	81.9	91,348	55,607	42,824	60,600
	6 mos.	458	1,567,290	765,636	2,569,977	689,890	532,140	48,657	1,222,386	99,265	2,588,248	100.7	—18,271	—235,097	—270,218	—148,273
Oklahoma City-Ada-Atoka	June	129	71,146	4,741	78,636	33,162	6,247	1,400	22,192	3,674	66,675	84.8	11,961	7,695	—5,195	—52,070
	6 mos.	129	421,042	33,843	476,541	156,620	52,317	8,110	163,397	23,878	401,146	84.2	75,395	49,803	—32,565	—53,091
Pennsylvania R. R.	June	10,511	32,953,003	9,753,366	47,814,092	6,253,229	9,309,377	921,779	17,132,717	1,662,280	35,915,569	75.1	11,898,523	8,418,241	7,150,285	11,873,461
	6 mos.	10,511	202,598,594	58,841,721	290,730,866	35,499,798	58,548,815	5,422,124	107,518,585	10,179,997	220,924,549	76.0	69,806,317	52,424,263	45,336,673	64,657,052
Long Island	June	404	795,566	2,690,523	3,662,765	410,028	401,065	21,667	1,270,726	62,509	2,167,013	59.2	1,495,752	1,148,761	994,968	1,042,967
	6 mos.	404	4,964,456	12,833,116	18,787,458	2,517,436	2,726,010	139,280	7,741,535	400,731	13,528,768	72.0	5,258,690	4,093,345	3,197,899	3,744,891
West Jersey & Seashore	June	369	335,734	323,430	694,796	116,625	94,080	4,686	348,758	16,162	583,296	84.0	111,500	33,895	7,104	192,506
	6 mos.	369	2,211,423	1,569,616	3,981,594	579,774	539,933	26,103	1,945,546	96,623	3,204,642	80.5	776,952	312,464	159,794	478,078
Peoria & Pekin Union	June	19	12,439	1,467	125,657	23,084	13,211	5,031	60,885	7,669	109,880	87.4	15,777	644	22,342	39,825
	6 mos.	19	89,078	6,819	841,739	137,854	91,090	31,197	388,948	49,409	698,498	83.0	143,241	43,529	156,199	235,278
Pere Marquette	June	2,241	2,679,313	192,484	3,088,903	451,145	582,799	74,297	1,098,521	123,236	2,325,749	75.3	763,154	571,398	366,721	822,291
	6 mos.	2,241	17,176,509	1,076,059	19,400,028	2,809,532	4,154,868	452,618	7,182,471	709,447	15,325,937	79.0	4,074,091	3,162,991	2,114,510	4,728,418
Pittsburgh & Shawmut	June	102	92,950	2,825	98,471	12,086	19,800	1,651	28,659	5,241	67,437	68.5	31,034	29,715	29,780	24,143
	6 mos.	102	600,893	26,130	637,343	83,265	146,085	9,840	191,531	40,458	471,179	73.9	166,164	158,265	172,648	215,060
Pittsburgh & West Virginia	June	92	299,379	2,773	328,821	6,331	67,174	20,036	60,710	25,294	188,162	57.2	140,666	106,669	159,973	216,983
	6 mos.	92	1,773,662	18,871	1,961,918	131,345	448,879	121,247	373,474	123,599	1,256,157	64.0	705,761	529,197	830,599	1,326,979
Pittsburgh, Shawmut & Northern	June	198	108,476	589	112,872	41,799	27,526	1,713	41,205	7,323	119,566	105.9	—6,694	—9,497	—17,962	10,585
	6 mos.	198	792,293	6,227	820,050	168,347	163,345	10,876	277,100	40,179	659,847	80.5	160,203	143,012	98,173	160,399
Quincy, Omaha & Kansas City	June	249	36,433	5,579	48,700	36,038	9,906	871	22,606	2,411	71,697	147.2	—22,997	—27,689	—30,003	—39,157
	6 mos.	249	236,685	36,956	310,424	136,975	40,182	5,119	147,827	15,695	344,973	111.1	—34,549	—62,720	—76,871	—105,046
Reading	June	1,461	6,137,297	478,714	7,084,904	1,106,286	1,707,478	115,586	2,737,502	225,936	5,911,990	83.4	1,172,914	881,700	889,357	729,511
	6 mos.	1,461	38,559,028	3,169,947	44,482,733	6,634,527	11,068,757	594,614	17,220,147	1,343,946	37,008,065	83.2	7,474,668	5,762,796	5,770,508	7,774,762
Atlantic City	June	163	102,262	166,379	290,367	59,605	24,295	5,815	165,787	8,952	264,584	91.1	25,783	—21,729	—41,329	135,794
	6 mos.	163	678,308	532,806	1,318,248	434,001	129,250	23,329	951,204	32,977	1,571,608	119.2	—253,360	—500,876	—599,872	428,844
Richmond, Fredericksburg & Potomac	June	117	505,089	208,373	861,379	187,542	181,677	10,170	309,556	38,502	742,433	86.2	118,946	81,748	38,260	160,579
	6 mos.	117	2,890,439	1,935,847	5,964,877	808,648	1,072,926	64,638	2,043,556	226,935	4,449,727	74.6	1,515,150	1,220,559	838,303	1,471,463
Rutland	June	413	267,631	61,650	438,965	106,247	82,280	11,444	168,138	17,535	387,454	88.3	51,511	31,933	36,295	58,185
	6 mos.	413	1,622,552	443,945	2,644,563	468,791	556,830	69,228	1,093,267	101,876	2,299,423	86.9	345,140	218,052	261,973	393,952
St. Louis-San Francisco	June	5,307	4,627,587	750,938	5,844,701	844,863	1,111,249	134,714	1,993,322	226,939	4,282,191	73.3	1,562,510	1,202,160	1,175,817	1,539,299
	6 mos.	5,307	28,552,501	4,447,406	36,031,359	4,580,276	6,995,266	773,982	12,840,465	1,394,867	26,400,091	73.3	9,631,268	7,601,583	7,628,240	8,974,807
Ft. Worth & Rio Grande	June	233	71,257	3,906	80,174	18,424	13,475	3,189	37,471	4,674	76,886	95.9	3,288	—1,170	—9,072	21,857
	6 mos.	233	357,923	26,465	434,336	124,689	93,091	18,615	238,185	27,527	500,689	115.3	—66,353	—93,379	—145,015	—43,620
St. Louis-San Francisco & Texas	June	154	117,398	9,376	132,523	20,595	21,738	5,425	50,557	7,730	105,995	80.0	26,528	23,156	—3,313	562
	6 mos.	154	684,596	56,752	773,297	121,974	129,706	34,193	316,728	48,236	648,566	83.9	124,731	105,872	—57,100	—3,989
St. Louis Southwestern Lines	June	1,816	1,935,139	77,103	2,146,925	423,507	318,098	121,824	675,776	90,935	1,640,147	76.4	506,778	416,365	248,823	351,895
	6 mos.	1,816	10,573,496	474,708	11,923,407	1,805,297	1,941,303	668,829	4,120,205	584,405	9,207,554	77.2	2,715,853	2,172,146	1,323,149	1,465,603
San Diego & Arizona	June	155	90,387	10,083	103,732	14,267	16,874	3,806	25,307	8,180	69,675	67.2	34,057	28,678	29,177	66,998
	6 mos.	155	504,441	107,501	626,602	98,557	101,712	23,782	162,022	49,185	443,331	70.8	183,271	150,923	153,745	208,347
Seaboard Air Line	June	4,493	3,001,668	353,200	3,683,835	529,137	692,375	193,495	1,410,196	170,354	3,028,403	82.2	655,432	328,632	344,924	938,111
	6 mos.	4,499	20,892,544	3,559,716	27,102,971	3,649,564	4,706,069	1,233,027	9,893,837	1,071,348	20,871,679	77.0	6,231,292	4,195,709	3,667,742	6,122,863
Southern Ry.	June	6,731	6,712,746	1,523,925	9,025,704	1,457,810	2,034,826	244,344	3,318,500	364,002	7,499,360	83.1	1,526,344	804,487	675,442	3,178,818
	6 mos.	6,731	47,330,268	9,160,208	61,663,969	9,801,921	12,407,610	1,459,830	21,854,336	2,229,906	48,233,479	78.2	13,430,490	8,875,867	7,931,674	14,915,615
Alabama Great Southern	June	314	506,499	109,690	661,992	132,052	171,690	20,264	210,343	23,433	564,075	85.2	97,917	51,425	79,165	227,613
	6 mos.	314	3,368,337	615,275	4,286,863	794,460	1,001,302	120,733	1,348,556	146,822	3,448,876	80.5	837,987	528,985	630,466	1,249,090
Cinn., New Orleans & Tex. Pac.	June	338	1,192,402	172,938	1,439,828	263,665	368,290	43,074	451,200	52,401	1,186,683	82.4	253,145	181,898	159,429	520,782
	6 mos.	338	7,897,323	1,194,662	9,644,032	1,681,848	2,202,485	248,288	2,862,149	320,673	7,388,129	76.6	2,255,903	1,735,274	1,670,307	1,507,846
Georgia Southern & Florida	June	397	186,539	44,497	251,210	64,584	73,814	2,914	99,450	2,465	246,600	98.2	4,610	—18,384	—17,341	88,342
	6 mos.	397	1,310,836	510,450	1,980,738	405,675	441,697	14,939	720,573	16,886	1,639,384	82.8	341,354	193,064	154,582	269,694

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
New Orleans & Northeastern	June	204	$278,430	$50,470	$352,464	$59,593	$74,723	$11,440	$112,737	$15,171	$277,075	78.6	$75,389	$34,217	$14,473	$60,741
	6 mos.	204	1,829,567	308,076	2,286,906	369,350	434,646	67,266	718,432	86,751	1,697,666	74.2	589,240	330,120	146,232	440,692
Northern Alabama	June	110	68,780	2,954	74,435	21,604	3,307	2,440	27,504	3,276	58,095	78.0	16,340	10,806	—8,086	11,915
	6 mos.	110	510,157	22,047	550,263	126,424	21,408	14,085	179,555	18,767	360,203	65.5	190,060	155,874	35,866	108,332
Southern Pacific	June	9,124	11,207,220	3,237,181	15,921,895	2,020,840	2,610,861	445,943	5,104,438	623,847	11,058,606	69.5	4,863,289	3,491,581	3,008,778	4,785,600
	6 mos.	9,123	67,318,499	17,925,513	93,469,184	12,441,469	17,179,126	2,636,465	31,725,341	4,035,371	69,586,461	74.4	23,882,723	16,274,348	13,967,602	21,816,204
So. Pacific Steamship Lines	June	....	554,531	78,089	676,862	17,112	172,830	22,156	465,652	33,165	710,915	105.0	—34,053	—35,375	—32,242	67,970
	6 mos.	....	3,512,725	288,030	4,062,603	109,773	1,045,078	135,291	2,867,990	260,325	4,418,457	108.8	—355,854	—364,121	—344,644	179,340
Texas & New Orleans	June	4,721	3,818,706	721,789	4,899,640	739,747	1,023,980	232,300	1,652,008	262,446	3,925,520	80.1	974,120	684,208	375,514	641,873
	6 mos.	4,721	23,845,523	4,450,061	30,734,531	5,326,328	6,393,973	1,120,928	10,573,159	1,581,450	25,048,455	81.5	5,686,076	3,869,042	2,226,456	4,627,042
Spokane, Portland & Seattle	June	554	533,897	96,563	687,273	118,363	102,491	16,431	210,374	22,609	477,329	69.5	209,944	123,330	107,763	221,786
	6 mos.	554	3,069,742	435,282	3,850,554	559,193	612,968	75,999	1,299,338	140,081	2,722,506	70.7	1,128,048	605,588	520,650	949,162
Tennessee Central	June	296	243,282	11,424	266,890	35,692	29,759	9,721	85,383	14,258	174,709	65.5	92,181	86,654	71,179	61,864
	6 mos.	296	1,380,999	64,045	1,525,479	307,219	257,352	56,392	550,932	84,732	1,253,683	82.2	271,796	239,132	139,920	175,616
Terminal R. R. Assn. of St. Louis	June	55	.....	.....	848,797	94,001	71,703	3,425	376,066	23,954	571,692	67.4	277,105	90,528	180,403	335,291
	6 mos.	55	.....	.....	5,358,183	778,689	551,414	18,508	2,525,310	162,453	4,056,099	75.7	1,302,084	683,775	1,219,378	1,859,504
Texas & Pacific	June	1,955	2,650,411	399,433	3,272,693	443,143	544,695	93,023	1,027,707	124,454	2,240,231	68.5	1,032,462	857,122	661,552	586,166
	6 mos.	1,955	15,748,383	2,388,735	19,540,339	2,870,554	3,275,035	537,510	6,328,740	765,145	13,791,670	70.6	5,748,669	4,644,629	3,439,384	3,881,429
Texas Mexican	June	162	80,758	3,728	91,802	15,168	16,332	3,342	39,066	8,888	82,111	89.4	9,691	4,691	—4,938	6,016
	6 mos.	162	488,600	19,201	573,317	97,277	102,328	20,280	240,468	49,679	503,670	87.8	69,647	39,609	—11,888	58,530
Toledo, Peoria & Western	June	239	132,320	196	136,427	17,858	21,846	14,016	55,150	8,727	117,597	86.2	18,830	13,130	6,317	46,247
	6 mos.	239	938,771	1,760	963,596	118,786	156,543	87,273	399,431	53,204	815,219	84.6	148,377	118,589	63,645	239,114
Toledo Terminal	June	28	.....	.....	85,968	19,952	17,144	617	42,351	5,275	85,294	99.2	674	—14,215	555	47,616
	6 mos.	28	.....	.....	614,297	84,197	105,146	3,467	291,871	30,026	514,293	83.7	100,004	8,736	143,983	318,125
Trinity & Brazos Valley	June		Name changed to Burlington — Rock Island.													
	6 mos.		Name changed to Burlington — Rock Island.													
Ulster & Delaware	June	128	36,779	14,334	89,042	20,594	12,625	1,637	43,278	4,253	82,387	92.5	6,655	555	—1,141	6,721
	6 mos.	128	191,079	29,833	442,834	87,494	78,025	7,874	224,907	24,647	422,947	95.5	19,887	—8,613	—19,641	—23,916
Union R. R. of Penna.	June	45	.....	.....	917,225	89,620	194,176	185	333,166	14,919	631,770	68.9	285,455	263,455	355,997	566,409
	6 mos.	45	.....	.....	4,448,255	540,641	991,534	942	1,978,634	88,511	3,599,266	80.9	848,989	657,189	1,010,851	1,663,703
Union Pacific	June	3,765	5,530,596	1,338,798	7,794,939	1,054,122	1,829,310	229,829	2,291,209	323,688	5,920,291	76.0	1,874,648	1,223,019	1,064,627	1,772,274
	6 mos.	3,765	35,159,582	6,131,325	45,943,656	4,997,176	10,911,808	1,193,120	14,168,539	2,003,955	34,168,062	74.4	11,775,594	7,691,005	6,926,741	10,840,204
Oregon Short Line	June	2,538	1,883,638	310,029	2,416,700	515,657	412,845	60,848	760,276	125,077	1,914,675	79.2	502,025	191,065	130,381	327,268
	6 mos.	2,538	12,661,345	1,472,128	15,327,558	2,614,502	2,692,195	348,595	4,785,874	759,831	11,445,817	74.7	3,881,741	2,052,592	1,581,332	3,166,470
Oregon-Wash. R. R. & Nav.	June	2,364	1,562,373	238,572	2,000,616	443,038	286,322	84,174	727,623	124,454	1,684,555	84.2	316,061	124,793	36,748	105,007
	6 mos.	2,364	9,308,381	1,128,092	11,575,503	2,226,355	1,846,942	472,494	4,593,825	744,364	10,005,541	86.4	1,569,962	420,443	—117,583	—53,975
Los Angeles & Salt Lake	June	1,229	1,263,094	446,822	1,912,250	252,297	320,494	89,638	579,774	83,040	1,399,936	73.2	512,314	350,558	247,766	536,550
	6 mos.	1,229	8,566,578	1,897,014	11,533,225	1,805,657	1,984,658	521,280	3,696,305	507,245	8,912,636	77.3	2,620,589	1,637,895	917,604	2,248,097
St. Joseph & Grand Island	June	258	206,793	7,817	226,692	45,128	31,650	3,217	90,163	17,239	188,572	83.2	38,120	23,327	6,920	25,976
	6 mos.	258	1,507,646	46,522	1,625,126	248,174	206,626	20,869	574,275	97,413	1,158,754	71.3	466,372	359,831	245,061	309,003
Utah	June	111	64,751	.....	64,938	17,788	28,354	371	17,219	5,983	69,715	107.4	—4,777	—8,515	—18,382	9,443
	6 mos.	111	752,602	.....	756,865	128,121	206,295	2,148	193,219	36,799	566,582	74.9	190,283	147,582	58,366	284,895
Virginian	June	561	1,199,931	17,504	1,293,397	165,347	241,348	14,107	280,767	32,193	734,104	56.8	559,293	404,282	465,145	646,195
	6 mos.	547	8,204,102	137,148	8,849,994	998,759	1,639,879	83,595	1,854,746	193,647	4,773,654	53.9	4,076,340	3,119,320	3,502,639	4,173,877
Wabash	June	2,523	4,113,402	529,279	5,045,774	732,717	873,199	200,353	1,980,259	221,780	4,034,219	80.0	1,011,555	789,214	433,650	830,875
	6 mos.	2,523	27,204,701	2,881,154	32,358,256	3,876,173	5,714,911	1,187,196	13,060,429	1,417,357	25,364,096	78.4	6,994,160	5,553,829	3,341,078	5,751,912
Ann Arbor	June	293	387,497	11,594	417,680	43,637	73,518	14,973	169,870	20,139	322,051	77.1	95,629	69,223	46,719	70,487
	6 mos.	293	2,387,848	68,334	2,535,641	238,579	515,684	87,572	1,068,338	86,140	1,995,745	78.7	539,896	383,912	229,896	519,977
Western Maryland	June	896	1,299,590	13,154	1,435,610	235,355	275,417	42,122	370,351	43,853	963,203	67.1	472,407	382,407	378,749	413,079
	6 mos.	894	8,462,065	96,707	9,015,918	1,281,125	1,705,034	265,526	2,436,163	257,030	5,958,802	66.1	3,057,116	2,527,116	2,640,195	2,499,848
Western Pacific	June	1,051	949,781	144,811	1,202,036	190,983	213,017	85,102	457,036	48,610	1,033,828	86.0	168,208	73,688	101,713	66,372
	6 mos.	1,051	5,791,884	514,759	6,805,773	1,785,741	1,459,095	427,547	2,757,101	294,239	6,886,942	101.2	—81,169	—675,926	—478,185	691,878
Wheeling & Lake Erie	June	511	1,512,360	14,663	1,657,565	189,704	349,039	39,063	450,334	46,842	1,076,734	65.0	580,831	430,102	438,213	516,506
	6 mos.	511	8,326,684	98,702	8,997,342	998,341	2,203,661	230,710	2,621,957	274,163	6,336,488	70.4	2,660,854	1,855,841	1,888,859	2,620,202
Wichita Falls & Southern	June	203	74,033	270	78,592	18,067	9,925	3,260	22,590	3,406	55,767	70.96	22,825	17,617	12,457	25,223
	6 mos.	203	456,640	3,180	484,924	90,216	63,298	17,774	157,238	29,622	354,011	73.00	130,913	99,461	63,761	104,122

News of the Week

(*Continued from Page 291*)

The government further contends that several million acres of land that have been received by the railroad company were obtained by it wrongfully.

Description of Sprague Automatic Train Control

G. E. Ellis, secretary of the Committee on Automatic Train Control, American Railway Association, Washington, D. C., has issued Bulletin No. 7 of the series which is being prepared by that committee to make public full and complete descriptions of all types of automatic train control in use in America. The Sprague system, "Intermittent magnetic induction train control" is in use on the Chicago, Burlington & Quincy, the Great Northern, and the Northern Pacific; and the bulletin, consisting of 62 pages, fully illustrated, gives not only a complete and minute description and explanation of the apparatus generally, but also full notes concerning local conditions on each road.

The price of the bulletin to officers and employees of roads in the American Railway Association is 35 cents and to other persons 70 cents. Mr. Ellis announces that Bulletin No. 8, describing the different continuous systems of the Union Switch & Signal Company and No. 9 describing the continuous system of the General Railway Signal Company are in course of preparation.

Tool Foremen's Convention Program

On September 10, 11 and 12, the eighteenth annual meeting of the American Railway Tool Foremen's Association will be held at the Hotel Sherman, Chicago, with President A. A. Ferguson, tool supervisor, Missouri Pacific, St. Louis, Mo., in the chair. The details of the program are as follows:

WEDNESDAY, SEPTEMBER 10

9:30 a. m.—Opening exercises
Address by O. A. Garber, chief mechanical officer, Missouri Pacific, St. Louis, Mo.
Response by C. A. Shaffer, general supervisor of shop machinery and tools, Illinois Central, Chicago
Address by President A. A. Ferguson, tool supervisor, Missouri Pacific, St. Louis, Mo.
Report by Secretary-Treasurer G. G. Macina, Chicago, Milwaukee, St. Paul & Pacific, Chicago
Appointment of committees

2:00 p. m.—Address on Forging Machine Dies, by H. N. Anderson, Acme Machinery Company, Cleveland, Ohio
Report of Standing Committee on Tools and Methods for Mass Production; chairman, M. B. Roderick, assistant supervisor of tools and machinery, Erie, Meadville, Pa.
Adjournment

THURSDAY, SEPTEMBER 11

9:30 a. m.—Address on Safety First, by H. Guilbert, director of public safety, Pullman Company, Chicago
Response by E. J. McKernan, supervisor of tools, Atchison, Topeka & Santa Fe, Topeka, Kan.
Address on Heat Treatment of Steel, by Alexander H. d'Arcambal, Pratt & Whitney Co., Hartford, Conn.
Report of Standing Committee on Tools for Maintaining Automotive Equipment; chairman, W. H. Smith, tool supervisor, Missouri Pacific, Little Rock, Ark.
Election of officers

FRIDAY, SEPTEMBER 12

9:30 a. m.—Report of Standing Committee on Testing Devices for Pneumatic Tools and Jacks; chairman, C. B. Heingarten, tool foreman, Chicago & North Western, Chicago
Report of Standardization Committee, E. J. McKernan, chairman
Closing business

Revenues and Expenses for Six Months

The 172 Class I railroads of the United States for the first six months this year had a net railway operating income of $376,428,836, which was at the annual rate of return of 3.61 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics and made public today. In the first half of 1929, their net railway operating income was $562,729,734 or 5.52 per cent on their property investment. The decrease was 33.1 per cent.

Operating revenues totaled $2,691,464,898, compared with $3,067,818,671 for the same period last year, or a decrease of 12.3 per cent. Operating expenses amounted to $2,073,253,472, compared with $2,249,486,145, a decrease of 7.8 per cent.

Class I railroads in the first six months of 1930, paid $181,245,808 in taxes, compared with $197,041,739 for the same period the year before. For the month of June alone, the tax bill of the Class I railroads amounted to $31,379,697, a decrease of $2,904,692.

Twenty-seven Class I railroads operated at a loss in the first half of 1930, of which 9 were in the Eastern district, 2 in the Southern and 16 in the Western.

Net railway operating income by districts for the first half of 1930, with the percentage of return based on property investment on an annual basis was as follows:

New England Region	$21,526,009	5.23%
Great Lakes Region	69,749,171	3.50%
Central Eastern Region	89,640,046	3.89%
Pocahontas Region	38,563,547	8.08%
Total Eastern District	219,478,773	4.23%
Total Southern District	43,189,454	2.73%
Northwestern Region	23,283,499	2.28%
Central Western Region	58,411,262	3.43%
Southwestern Region	32,065,848	3.46%
Total Western District	113,760,609	3.12%
Total United States	376,428,836	3.61%

For June the net operating income was $68,881,473 which, for that month, was at the annual rate of return of 3.35 per cent on their property investment. In June last year, the net was $105,817,808, or 5.27 per cent. Operating revenues for June amounted to $444,848,489, compared with $532,621,029 in June last year, a decrease of 16.5 per cent. Operating expenses totaled $334,637,933, compared with $382,354,669 in the same month in 1929, a decrease of 12.5 per cent.

Class I railroads in the Eastern District for the first six months had a net of $219,478,773, which was at the rate of 4.23 per cent. For the same period in 1929, their net was $304,260,707, or 6.01 per cent. Operating revenues in the Eastern district for six months totaled $1,365,705,017, a decrease of 11.5 per cent below those of the corresponding period the year before, while operating expenses totaled $1,030,516,648, a decrease of 7.8 per cent. Class I railroads in the Eastern district for June had a net of $38,737,996, compared with $56,806,721 in June, 1929.

In the Southern district for the first six months the net railway operating income was $43,189,454, at the rate of 2.73 per cent. For the same period in 1929, the net amounted to $68,963,135, at the rate of 4.40 per cent. Operating revenues in the Southern district for six months amounted to $342,993,041, a decrease of 13.1 per cent, while operating expenses totaled $271,291,074, a decrease of 8 per cent. Class I railroads in the Southern district for June had a net of $4,113,833, compared with $10,149,603 in June, 1929.

Class I railroads in the Western district for six months had a net of $113,760,609, which was at the rate of 3.12 per cent. For the first six months in 1929, they had a net of $189,505,892, which was at the rate of 5.32 per cent. Operating revenues in the Western district for six months amounted to $982,766,840, a decrease of 12.9 per cent under those of the same period last year, while operating expenses totaled $771,445,750, a decrease of 7.8 per cent. For June, the net of the Class I railroads in the Western district amounted to $26,029,644. The net of the same roads in June, 1929, totaled $38,861,484.

CLASS I RAILROADS—UNITED STATES

	Month of June 1930	1929
Total operating revenues	$444,848,489	$532,621,029
Total operating expenses	334,637,933	382,354,669
Taxes	31,379,697	34,284,389
Net railway operating income	68,881,473	105,817,808
Operating ratio—per cent	75.23	71.79
Rate of return on property invest.	3.35%	5.27%
	Six months ended June 30	
Total operating revenues	$2,691,464,898	$3,067,818,671
Total operating expenses	2,073,253,472	2,249,486,145
Taxes	181,245,808	197,041,739
Net railway operating income	376,428,836	562,729,734
Operating ratio—per cent	77.03	73.33
Rate of return on property invest.	3.61%	5.52%

New York Railroad Club Golf Tournament, August 12

Plans have been completed for the "First Annual Open Golf Team Championship of the American Railroad Industry" to be held under the auspices of the New York Railroad Club at the Winged Foot Golf Club, Mamaroneck, N. Y., on August 12. The program states that the contest will be open to entrants representing all railroad and railroad supply companies.

Prizes will be given in three classes, such classes to be determined by the handicaps accepted by participants. In addition, there will be a "kicker's" prize and a guest prize. Each entrant is to send in his own handicap, or lacking one, to send in his five best scores of this year. The winning team will receive a large cup and each member a gold medal. The cup symbolizes the best four man railroad or supply company team in the country and must be won three times to be kept.

The program states that it is the en-

deavor of the New York Railroad Club to make this golf tournament an annual event. The contest will be open to any accredited steam or electric railroad or supply company or company serving the industry. Each team member must be a bona fide employee of the company but need not be a member of the New York Railroad Club. Any company may enter as many men as they wish before the players start and select the four lowest gross scores for their team score. The announcement further calls the event "The only contest of its kind in the industry" and urges all companies to enter teams.

Tickets for members will be $5.00, including dinner (greens fees and lunch extra), for non-member guests $7.00. Motor coaches will be provided at the Mamaroneck station of the New Haven to transport members and guests to the club where the play will start at 2:30 p. m. Prizes will be presented at the dinner to be served at 7:30 p. m.

Following are the committee in charge of the event.

General Chairman
J. S. DOYLE, JR.

Assistant General Chairman
C. E. BRYANT, JR.

General
J. S. Doyle, Sr.
D. W. Pye
Charles G. Melvin

Golf
Charles C. Hubbell, *Chairman*
G. E. Hall, Jr.
J. J. Dunne
A. E. Calkins
Ed. L. Smith
E. Barrett Smith
F. O. Schramm

Dinner
W. J. Fripp, *Chairman*
A. E. Ostrander
Roswell P. Cooley
Arthur Dugan
N. M. Garland
H. B. Chamberlain
F. H. Hardin
Elisha Lee
F. J. Foley
W. G. Curren

Advisory
George LeBoutillier, *Chairman*
W. W. Atterbury
W. G. Besler
P. E. Crowley
J. J. Bernet
Frank Hedley
W. S. Menden
J. J. Pelley
R. P. White
J. M. Davis

Reception
W. M. Wampler, *Chairman*
B. P. Flory
W. H. Flynn
Elliott Sumner
Frank Shepherd
C. E. Chambers
E. T. Dickerson
J. E. Muhlfeld
J. A. Droege
Ross F. Hayes
W. G. Gove
H. B. Weatherwax
C. W. Galloway
W. H. Coyle
W. G. Black
Samuel G. Allen
J. S. McWhirter
W. B. Conwell

Transportation
W. E. Thompson, *Chairman*
C. C. Castle
J. C. Chisholm
J. H. Vanderveer
H. A. Benedict
E. L. Brown
R. A. Hauer
Nyles Persons
R. E. Fielder

Railway Attendance
L. L. White, *Chairman*
L. E. Hansen
George C. Bishop
E. A. Jones
C. C. Fletcher
Frank E. Driscoll
J. J. Sinclair

Manufacturers Attendance
Joseph F. Lamb, *Chairman*
Scott Donahue
C. F. Scott
Lucian C. Brown
George A. Gallinger
Gilbert E. Ryder
Howard P. Cook
C. R. Jones
Charles C. Pierce

Publicity
George F. Mand, *Chairman*
George Flatow
C. W. Y. Currie

O. E. Sweet Appointed Director of I.C.C. Finance Bureau

The Interstate Commerce Commission on August 6, announced the promotion of Oliver E. Sweet, of South Dakota, from the office of assistant general solicitor, Bureau of Valuation, to the office of director, Bureau of Finance, to succeed Charles D. Mahaffie, recently appointed by the President to be a member of the Interstate Commerce Commission, to succeed Thomas F. Woodlock, resigned, all effective on September 1.

Mr. Sweet was born at Silverton, Colo., June 3, 1882. When three years of age he moved with his parents to a farm in Hutchinson County, South Dakota, where he lived until 1905. He attended the local common schools and graduated from the state university with the degree of A. B. in 1904, and L. L. B. in 1906. After graduation he practised law in Rapid City, S. D., from 1906 to 1914. For the four years from 1910 to 1914 he was city attorney of Rapid City and later, from January, 1915, to June, 1921, he was assistant attorney general of the state and counsel for the Board of Railroad Commissioners. He entered the employ of the Interstate Commerce Commission as an examiner in the Bureau of Finance in July, 1921. He was subsequently transferred to the Bureau of Valuation, first as examiner, and later, in 1925, as assistant solicitor, from which position he has now been promoted to that of director of the Bureau of Finance.

NET OPERATING PROFIT earned by the Lithuanian Railways during the year 1929 totaled 10,385,081 lits, or $1,038,508, according to the annual report of the system, recently received by the Department of Commerce. This figure represents an increase of 2,260,217 lits, or approximately $226,022, over the net of 8,124,864 lits ($812,486) earned in 1928. Operating revenues for 1929 were 46,560,630 lits, while expenses amounted to 36,175,549 lits. Freight handled during the year totaled 2,079,000 metric tons, of which 1,414,304 metric tons originated within Lithuania and 664,696 metric tons were received from connecting carriers; and 5,508,036 passengers were carried during the twelve months.

The total length of line operated by the Lithuanian Railway system at the end of the year was 2,025 kilometers, or 1,256 miles, of which 1,537 kilometers (954 miles) was standard 4 ft. 8½ in. gage, and 488 kilometers (302 miles) narrow gage. A total of 119 locomotives, 80 of which were for standard gage operation, were in use and 115 stored.

Traffic

The fall meeting of the Associated Traffic Clubs of America will be held at the Biltmore Hotel, Atlanta, Ga., on October 8 and 9.

A hearing of ex parte, 17,000, part 12, rate struction investigation, non-ferrous metals, was held before representatives of the Interstate Commerce Commission at Denver, Colo., on July 29 and 30.

The Pennsylvania plans to establish a permanent traffic agency in Mexico City, D. F., according to a recent announcement by J. L. Eysmans, vice-president in charge of traffic. The new office, the announcement states, will be opened within a month.

The Interstate Commerce Commission has found not justified a proposed increase by the New Orleans Terminal Company in its charge for weighing and reweighing carload shipments handled in switching movement at New Orleans, La., from $2.25 to $3.15 a car. The suspended tariff schedules were ordered cancelled.

The Missouri Pacific, in conjunction with the Southern Pacific, has placed its sleeping car service between St. Louis, Mo., and Los Angeles, Cal., on a 63 hr. schedule. Cars now leave St. Louis at 6:30 p.m. on the Sunshine Special as formerly, but arrive in Los Angeles at 7:30 a.m. instead of 9:15 a.m. Returning the cars are carried on the Texan, leaving Los Angeles at 6:20 p.m. and arriving in St. Louis at 8:20 a.m.

Improved Chicago-St. Louis Train Service

The Illinois Central has established an additional 6½-hr. train, the "Michigan Boulevard," between Chicago and St. Louis. The train leaves Chicago at 4:00 p.m. and arrives in St. Louis at 10:30. The northbound train which leaves St. Louis at 9:00 a.m. has been given the same name and has been placed on a 6½-hr. schedule, arriving in Chicago at 3:30 p.m. instead of 4:00.

The Chicago & Eastern Illinois has placed "The Zipper," between Chicago and St. Louis on a 6½-hr. schedule in both directions. The train now leaves Chicago at 3:30 p.m. and arrives in St. Louis at 10:00 p.m. Returning, it leaves St. Louis at 8:45 a.m. as formerly and arrives in Chicago at 3:15 p.m. instead of 3:36 p.m.

Federal Barge Line Proposes to Operate on Illinois River

The Inland Waterways Corporation has filed with the Interstate Commerce Commission an application for a certificate authorizing it to extend its operations to the Illinois river, proposing to establish through barge service on that river between its confluence with the Mississippi river and Joliet, Ill., in connection with its service on the Mississippi and Warrior rivers. The ports of call and interchange of freight with other carriers will be Joliet, La Salle, Peoria, Pekin, and

Havana, at which points terminals are to be acquired and operated by the Inland Waterways Corporation. The application states that the corporation now has sufficient floating equipment available to meet the initial requirements of this service. It also asks the commission to direct the connecting rail carriers and their connections to join with the barge line in the establishment of through routes and joint rates, and that they be directed to enter into negotiations for equitable divisions of the joint rates.

Railways Asked to Investigate Drought Relief Situation

President Hoover announced on August 5 that he had requested the railways to investigate from a transportation point of view the situation of the effect of widespread drought conditions on livestock and the measure of relief that may be necessary. Louis J. Taber, master of the National Grange, in a call on the President the day before had suggested that the Interstate Commerce Commission authorize special reduced rates for this purpose. It has often in the past authorized emergency rates for the purpose of transferring livestock from drought areas to places where better conditions existed.

After conferences with the Secretary of Agriculture and the chairman of the Federal Farm Board, President Hoover said the department had undertaken a detailed survey of the situation and that "it is evident already that large measures of feed movement to livestock in the drought areas or movements of animals out of the worst areas will need to be undertaken later in the Fall." "It is too early to determine the precise character of relief;" he said, "much depends on the further spread of the drought; but no stone will be left unturned by the federal government in giving assistance to local authorities."

Eastern Livestock Rates Increased

An increase as compared with the present freight rates on livestock from central territory to points in trunk line and New England territory has been ordered by the Interstate Commerce Commission, effective on October 15, as a result of further hearing in Eastern Livestock Cases of 1926, although the rates now prescribed are lower than those in effect at the time of the original report in July, 1928. In the original report rates were prescribed for the transportation of edible livestock within central territory and from central territory to trunk line and New England territories, the rates from Chicago and the Mississippi and Ohio river crossings being for application both locally and on traffic from beyond. The key rate from Chicago to New York of 56.5 cents on cattle, and on calves, hogs and sheep in double-deck cars, was reduced to 50.5 cents, and corresponding reductions were made in rates to and from related points. This key rate, as the result of further hearing, is now to be increased to 53 cents and corresponding changes will be made in related rates.

The commission also reduced to 60 cents the rates from Nashville, Tenn., to New York of 68.5 cents on cattle and 66 cents on hogs, sheep and goats in double-deck cars, and made corresponding reductions to other destinations. The rate from Nashville is now made 61 cents to destinations in the New York group, 58 cents to destinations in the Philadelphia rate group, and 54 cents to destinations in the Baltimore rate group.

Between points in central territory the rates will be based on a mileage scale. For application on shipments originating at or coming from beyond certain Mississippi river crossings the rate from St. Louis or East St. Louis is not to exceed the rate from Chicago by more than 5 cents, while as to other crossings the excess must not be more than 6 cents. Rates on livestock in single-deck cars are not to exceed on calves and hogs, 115 per cent, and on sheep 125 per cent, and on goats 125 per cent, of the rates found reasonable for cattle.

On October 13, 1928, the commission declined to grant petitions of the defendant railroads to postpone the effective date of the order but re-opened the cases for further hearing. The rates became effective on November 1, 1928. Defendants instituted court proceedings for an injunction on the ground that the rates prescribed were confiscatory. A preliminary stay order was denied but the court granted permission to take further evidence before a master, which the carriers have not yet submitted.

Extensive revenue and expense studies of the traffic in question were submitted by the railroads and also by Armour & Co., and Swift & Co., which are discussed at length in the report, but the commission says that defendants "have not submitted data from which even a fairly accurate approximation of the cost of hauling this livestock traffic can be made," although it added that "it does seem probable, however, that the cost is somewhat greater than was indicated in the original record." The original report was based in part on depression in the livestock industry. The later report says the record on further hearing indicates "that since our last decision there had been further improvement in post war conditions in the livestock industry."

Commissioners Woodlock and Farrell dissented, objecting to the reduction in the original rate of 56.5 cents. Commissioner Tate also dissented. Commissioner Lewis concurred, but expressed a doubt as to whether the 53-cent rate measures up to a maximum reasonable rate, although he said he thought it "falls clearly within the zone of a reasonable rate for the service." He said he concurred because the 56.5 rate was the same as the fifth-class rate between Chicago and New York, which is to be made 53 cents, and the new class rates prescribed should materially increase the revenue of the eastern carriers. Commissioner Eastman said that the railroads had failed to furnish adequate cost data and the commission should reopen the proceedings and obtain more nearly adequate data under the guidance of its own statistical and accounting experts.

Equipment and Supplies

Locomotives

THE LEHIGH VALLEY has ordered one 4-8-4 type locomotive from the American Locomotive Company. This locomotive will have 26 by 32 in. cylinders and a total weight in working order of 425,000 lb.

THE ILLINOIS STEEL COMPANY has ordered four locomotives of the 0-4-0 type from the American Locomotive Company. These locomotives will have 18 by 20 in. cylinders and a total weight in working order of 120,000 lb.

Freight Cars

THE ANGLO-CHILEAN CONSOLIDATED NITRATE CORPORATION is inquiring for 52 ore dump cars.

THE GREAT NORTHERN has ordered 100 hopper cars of 50 tons' capacity from the Canton Car Company.

THE UNITED STATES NAVY DEPARTMENT, BUREAU OF SUPPLIES AND ACCOUNTS, has ordered one steel box car of 50 tons' capacity from the American Car & Foundry Company.

THE WESTERN FRUIT EXPRESS has ordered 100 steel underframes from the Standard Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of May 3.

THE ST. LOUIS-SAN FRANCISCO has ordered 10 car sets of underframe and superstructure parts and miscellaneous forgings for box cars, from the American Car & Foundry Company.

Passenger Cars

THE BOSTON & MAINE has ordered four deluxe coaches and two deluxe combination passenger and baggage cars from the Osgood Bradley Car Company. Inquiry for this equipment was reported in the *Railway Age* of June 14.

Iron and Steel

THE ERIE has ordered 500 tons of steel for a bridge at Paterson, N. J., from the American Bridge Company.

THE MARLEY NECK BRANCH, just completed by the Baltimore & Ohio Railroad, was opened for traffic on August 1. This new facility into virgin industrial territory in the Baltimore area extends from Stahl Point, crosses Curtis Creek with a draw span bridge and continues to a connection with the Curtis Bay Railroad, a distance of about two miles. The cost of the new line was $1,000,000 and it has been under construction for some time.

Supply Trade

Cutler - Hammer, Inc., Milwaukee, Wis., on August 1, acquired the Reynolite division of the **Reynolds Spring Company,** Jackson, Mich.

C. A. Webb, representative of the **Universal Atlas Cement Company** has been promoted to district sales manager, with headquarters at Chicago.

J. T. Stephenson, railway supplies, Munsey building, Washington, D. C., has been appointed by the **Ra-Var Corporation,** Newark, N. J., its representative with certain railways in the southeastern territory. Mr. Stephenson will retain his other railway sales connections.

Charles C. Phelps, manufacturers' agent, 11 Park Place, New York City, has been appointed sales agent for the metropolitan district, New York and northern New Jersey, by the **Leavitt Machine Company,** Orange, Mass., to handle the Dexter valve reseating machine for globe, gate and pump valves.

A. F. Murphy has been appointed works manager of the Zanesville division of **The American Rolling Mill Company,** at Zanesville, Ohio. Heretofore Zanesville has been a part of the Middletown division but in future it will be operated as a separate unit. Mr. Murphy was first employed as a laborer in the Zanesville plant in 1906. He worked in numerous other positions in the plant until 1910, when he was made superintendent of the plant and on January 1, 1922, he was made plant manager at Zanesville. **L. F. Reinartz,** assistant general superintendent since 1923, has been appointed works manager of the Middletown division in charge of operations at East Works and Central Works at Middletown, Ohio. Mr. Reinartz joined the company in July, 1909, as a chemist in the open hearth department. Later he served successively in various positions until February, 1923, when he was made assistant general superintendent of the Armco plant at Middletown. **G. D. Tranter,** open hearth superintendent, has been appointed to the new position of general superintendent which has been created for the Middletown division and **S. E. Graeff** has been appointed assistant general superintendent at Middletown. Mr. Tranter became a member of the Armco organization in September, 1911, as weighmaster in the open hearth department and on October 1, 1923, he was appointed open hearth superintendent.

D. C. Jones, who has been appointed vice-president of the **Ayer & Lord Tie Company,** Chicago, was born near Bangor, Wis., on January 7, 1879, and on October 1, 1899, he entered the employ of the Ayer & Lord Tie Company at Chicago. On January 1, 1901, he was transferred to the branch office at DeValls Bluff, Ark., and on May 15, 1902, to the timber products production department at Carbondale, Ill. Thereafter he worked successively through the branch headquarters of the production department at DeValls Bluff, South McAlester, Okla., Ola, Ark., Little Rock, Memphis, Tenn., Paducah, Ky., and Burnside in the capacities of production superintendent and

D. C. Jones

general production superintendent. He was transferred from Paducah, Ky., to the main office in Chicago on November 1, 1923, where he served as general production superintendent until his recent promotion.

C. B. Woodworth, who has been appointed manager of the railroad division of the **Vanadium Corporation of America,** with headquarters at Chicago, was graduated in mechanical engineering from Purdue University in 1907. From that time until 1916 he served with the mechanical departments of the Wabash

C. B. Woodworth

and the Baltimore & Ohio, passing through various grades from machinist to general foreman at the Mt. Claire shops of the Baltimore & Ohio. He then entered the employ of the American Arch Company where he remained until 1918 when he received a commission as captain of engineers in the United States Army. Upon his return to this country after his service of 15 months with the A. E. F. on railroad work in France, he joined the foreign sales department of the American Locomotive Company and for six years was in the Argentine and in Brazil engaged in sales and service work. In 1926, he went with the Premier Staybolt Company as special technical representative and in May, 1927, left that service and was appointed manager of the western division of the Vanadium Corporation of America, with headquarters at Chicago.

Walter Smith, who has been appointed assistant manager of the railroad division of the **Vanadium Corporation of America,** with headquarters at Chicago, is a graduate in mechanical engineering of Cornell University, 1909. He began railway service with the Chicago, Rock Island & Pacific, and subsequently served with the Baltimore & Ohio and the Chicago & North Western in various supervisory capacities. In 1916, Mr. Smith entered the service of Pyle-National Company, Chicago, leaving that company for service in the American Expeditionary Force, where he was connected with the P., L. & M. shops and

Walter Smith

regimental camp at Nevers, France. After the armistice, he was associated with the Inter-Allied Railroad Commission and supervised the transfer of cars and locomotives in Germany in accordance with reparations agreements. Upon his return to this country, he resumed his service with the Pyle-National Company and was engaged as special representative on sales and service work until his association with the Vanadium Corporation of America.

National Steel Car Corp.

For the fiscal year ended June 30, 1930, the financial report of the National Steel Car Corporation Limited reveals not only the generally expected sharp expansion in earnings, but also a notable strengthening in balance sheet position, which includes a trebling of net working capital and a virtual elimination of a bank loan of over 2¼ millions.

Operating profits for the year amounted to $1,803,791, as compared with $602,229

in the preceding fiscal year. Earnings for the year under review were equal to $8.83 per share on the company's capital stock, this after a depreciation write-off amounting to $655,984, as against $2.78 per share in the preceding year, when depreciation was deducted at only $212,135.

Profit and loss account figures compare as follows:

	1929-30	1928-29	1927-28
Oper. profit	$1,803,791	$602,229	$534,849
Bond interest	.....	28,558	54,969
Balance	$1,803,791	$573,671	$479,880
Depreciation	*655,984	212,135	211,111
Balance	$1,147,807	$361,536	$268,769
†Write-off	.....	.....	†263,447
Balance	$1,147,807	$361,536	$5,292
Divids. paid	260,000	130,000	.....
Surplus	$887,807	$231,536	$5,292
Earn. per share	$8.83	$2.78	$2.68

† French Republic and Paris, Lyons and Mediterranean Railway Company claims written off.
* Including $250,000 special write-off buildings and equipment.

Obituary

William Dudley Foulke, for many years treasurer of the Western Wheeled Scraper Company, Aurora, Ill., died on July 23, at the age of 62. In 1894 Mr. Foulke joined the organization with which he became so closely identified,

William Dudley Foulk

and he was advanced until he became treasurer. Much of the development of the Western Wheeled Scraper Company has been ascribed to his judgment and initiative.

AS A RESULT OF HEAVY AND CONTINUED TRAFFIC AND FINANCIAL LOSSES, attributable in large measure to increased motor competition, on the government railways of New South Wales (Australia), the government of that territory is now considering a measure whereby the powers of the railway commission will be extended to enable it to cope with this competition, according to reports received by the Department of Commerce. The new plan would give the commission power to charge differential rates for the transportation of freight on the railways, and would also empower the railway authorities to make rebates to customers, conditional upon those shippers giving all of their traffic to the railways.

Construction

ATCHISON, TOPEKA & SANTA FE.—Wichita, Kan., has awarded a contract to the List & Weatherly Construction Co., for the construction of the sub-structure for a subway under the Santa Fe at Waterman street in that city.

BALTIMORE & OHIO.—The Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa., has a contract from this company for the construction of a water-treating plant at Jacksonburg, W. Va.

CHICAGO, BURLINGTON & QUINCY.—The city of Peoria, Ill., has petitioned the Illinois Commerce Commission asking for the separation of grades of the tracks of the Chicago, Burlington & Quincy, the Peoria & Pekin Union and the Chicago, Rock Island & Pacific and Cedar Street in that city.

ERIE.—A contract has been awarded the Roberts & Schaefer Company, Chicago, for the furnishing and erecting of a combined N. & W. type engine coaler and cinder handling plant and a sand drying plant at Akron, Ohio.

ILLINOIS CENTRAL.—This company has asked for bids for the construction of a viaduct to carry Randolph street over the site of its proposed suburban station at Chicago, a temporary suburban station at East South Water street and the permanent station between that street and Randolph street.

NEW YORK CENTRAL.—The Public Service Commission of New York has designated for elimination the River street grade crossing of this company's tracks in Oriskany, N. Y. Under the proposed plan of elimination the highway will be carried over the railroad at a point about 210 ft. southeast of the present crossing, at an estimated cost of $135,900.

NEW YORK CENTRAL.—This company has awarded to H. D. Best, McCaffrey Company, New York, a contract for alterations to its mail service building at 466 Lexington avenue, New York City. Bids for this work were received during the spring, as reported in the *Railway Age* of April 19. A contract has also been let to the Cyclone Fence Company, Newark, N. J., for the construction of a chain link fence between West 145th street and Spuyten Duyvil, New York City, and an additional contract for the demolition and removal of buildings on the west side of Manhattan, in connection with the general West Side improvement plan, has been awarded to the Demolition Company, Inc., New York.

NEW YORK CENTRAL.—The Public Service Commission of New York has approved specifications and an estimate of cost amounting to $155,300 submitted by this company for the elimination of a grade crossing on the Syracuse-Watertown county highway just south of Central Square station, Hastings, N. Y. The Commission has also approved estimates of $153,700 for the elimination of the Albion street highway grade crossing northwest of Holley station, Murray, N. Y., and of $139,200 for the elimination of the Colosse crossing, located about two miles south of Maple View station, Mexico, N. Y. Changes in telegraph lines, to be made by the Western Union Telegraph Company under contract with the railroad, and small additional expenditures for preliminary work, are required in connection with the elimination of all three crossings.

OREGON - WASHINGTON RAILROAD & NAVIGATION COMPANY.—A contract for the driving of a tunnel near Rowena, Ore., in connection with a change of line, has been awarded to the J. F. Shea Company, Portland, Ore.

PENNSYLVANIA.—Company forces are to be employed in the elimination of grade crossings of the Pennsylvania tracks and Bowen, Woodward and Rice roads, all located near Elma station, Elma, N. Y. The eliminations will be accomplished by raising the tracks, at a probable cost of $28,341, a figure which also includes alterations to the station building.

PERE MARQUETTE.—A contract has been awarded the Roberts & Schaefer Company, Chicago, for the designing and erecting of a 300-ton capacity reinforced concrete three-track shallow-pit locomotive coaling plant at New Buffalo, Mich.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.—The City Council of East St. Louis, Ill., has passed ordinances authorizing the association to construct three east side approaches to the St. Louis municipal bridge and to erect a union passenger station at Railroad and South Main streets, East St. Louis, to cost $700,000. A contract has been awarded to the Excavating Company, St. Louis, Mo., for the clearing of the site and the excavating for the proposed Merchandise Mart at Twelfth, Spruce, Thirteenth and Poplar streets, St. Louis.

UNION PACIFIC.—A contract for construction of the approximately 30 miles of railway connecting the Boulder Dam site with the Los Angeles & Salt Lake was concluded August 1 by the Acting Secretary of the Interior, Joseph M. Dixon, and the Union Pacific Railroad, of which the Los Angeles & Salt Lake line is a subsidiary. The Union Pacific is to build the entire branch line, the exact length of which will be 29.84 miles, although it will own only 22.39 miles of the road to a point known as "the summit" and a switchyard of .32 miles at the summit. The remaining 7.13 miles is to be owned by the government. Construction is to start immediately. The government had estimated that the entire line would cost $2,500,000 if it had to construct it. The Union Pacific will pay

for the 22.39 miles of railway, and will be compensated by freight revenues. The United States will pay to the railroad from time to time half of the cost of maintenance, repair and renewal of the joint section of .32 miles, plus 10 per cent of the construction cost, Mr. Dixon stated. The government will pay cost plus 10 per cent for the building of the line from the summit to the site of the dam.

WESTERN PACIFIC.—Examiner O. D. Weed of the Interstate Commerce Commission has recommended in a proposed report that the commission authorize the construction by the Western Pacific California, a subsidiary of the Western Pacific, of a line giving it a direct entrance to San Francisco at Quint street and extending to Redwood City and Niles, Cal., where connection would be made with the present line of the W. P., a total of about 39 miles. This includes a 2-mile branch from Redwood City to the plant of the Pacific Portland Cement Company and a bridge across San Francisco Bay, although the bridge and the trackage on each side of it would be constructed, if the commission imposes the conditions recommended by Examiner Weed, only in case the company is unable to secure from the Southern Pacific trackage rights over the Dumbarton bridge and adjacent trackage, on reasonable terms subject to the approval of the commission. Another condition recommended is that trackage rights over the new line on reasonable terms to be approved by the commission be granted to any other railroad desiring thus to secure an all-rail entrance to San Francisco for the purpose of gaining access to its own or other terminals in that city. The report also recommended that the Western Pacific be authorized to acquire a one-third interest in and operate over the Quint Street Line, in San Francisco, which is jointly owned by the Atchison, Topeka & Santa Fe and the Southern Pacific. The application was vigorously opposed by the Southern Pacific, which is the only steam railroad having an all-rail entrance into the city. The Western Pacific rails from the east terminate at Oakland and its traffic enters San Francisco by ferry and barge across the bay. From Niles to San Francisco the proposed line is about 15 miles longer than the present line of the W.P. to Oakland but it is stated that movement of freight over the 15 miles will take only half an hour or less, whereas the transfer across the bay takes several hours, and that the new line will enable the W.P. practically to eliminate its car barge operation to San Francisco. The cost of construction is estimated at $7,997,353, nearly half of which could be eliminated if trackage rights over the Dumbarton bridge are obtained. "The record indicates," the report says, "that the communities and interests to be served thereby, as well as the Western Pacific and its eastern connections, require that this carrier have an all-rail entrance into San Francisco, and that the results of such an entrance, after the first few probably disappointing years, will be satisfactory."

Railway Finance

CAROLINA, CLINCHFIELD & OHIO.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $803,000 of first and consolidated series B bonds to be delivered in equal amounts to the Louisville & Nashville and the Atlantic Coast Line in partial reimbursement for additions and betterments.

DENVER & RIO GRANDE WESTERN.—*Directorate.*—The directorate of this company, giving representation to the Van Sweringen interests which control the Missouri Pacific, which in turn shares the control of the D. & R. G. W., is now constituted as follows: O. P. Van Sweringen, L. W. Baldwin, Thomas M. Schumacher, Darwin S. Barrett, Jr., Alva Bradley, Winthrop W. Aldrich, Frederick H. Ecker, Arthur W. Loasby, J. S. Pyeatt.

GREAT NORTHERN PACIFIC.—*Further Hearing in Unification Case Asked.*—The Iowa state commission has joined other states in asking the Interstate Commerce Commission to hold further hearings on this company's application for authority to acquire control of the Great Northern and the Northern Pacific.

The Idaho commission has also filed a petition for a rehearing.

LONG ISLAND.—*Equipment Trust.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $1,305,000 of 4½ per cent equipment trust certificates, to be sold at 99.95 to Salomon Brothers & Hutzler and the First National Bank of New York, the highest bidders.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to sell $4,106,000 of first refunding mortgage 5½ per cent bonds to Dillon, Read & Co., at 96 and interest.

MISSOURI & NORTH ARKANSAS.—*Receivers' Certificates.*—The Interstate Commerce Commission has authorized this company to issue $600,000 of receivers' certificates to be sold at not less than 98.11 and the proceeds used to meet a maturity of the same class of obligation.

MISSOURI PACIFIC.—*Bonds.*—The Interstate Commerce Commission has authorized this company to procure authentication and delivery of $20,750,000 of first and refunded mortgage 5 per cent gold bonds, series H, and to pledge and repledge from time to time to and including June 30, 1931, all or any part of $16,700,000 of the bonds as collateral security for short-term notes.

MISSOURI PACIFIC.—*Directors.*—This company under the recent change in control, now in the hands of the Van Sweringen interests of Cleveland, has elected directors as follows: O. P. Van Sweringen, L. Warrington Baldwin, Leonard P. Ayres, Darwin S. Barrett, Jr., Alva Bradley, Henry G. Dalton, Arthur V. Davis, John R. Flippin, A. D. Geoghegan, Fred G. Hilvert, William T. Kemper, John G. Lonsdale, W. W. Reilley, Charles H. Sabin, John Sherwin, Jr., George A. Tomlinson, W. P. Weber.

Texas & Pacific Directors.—This company, pursuant to the acquisition of control of its controlling company, the Missouri Pacific, by the Van Sweringen interests has elected directors as follows: O. P. Van Sweringen, J. L. Lancaster, Leonard P. Ayres, L. Warrington Baldwin, George A. Tomlinson, John Sherwin, Jr., Alva Bradley, Darwin S. Barrett, Jr., W. W. Reilley, Matthew C. Brush, W. E. Connell, A. J. Duncan, Dunlevy Milbank, John G. Lonsdale, William Church Osborn, Charles H. Sabin, Finley J. Shepard.

NEW YORK CENTRAL.—*Acquisition and Operation.*—The Interstate Commerce Commission has authorized the Chicago, Kalamazoo & Saginaw, which is owned jointly by this company and its subsidiary, the Michigan Central, to acquire and operate the railroad formerly belonging to the Michigan Railroad Company extending from Richland Jct., Mich., northwesterly 10.3 miles to Hooper.

OREGON-WASHINGTON.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon a narrow-gage branch line extending from Megler, Wash., along the north shore of the Williamette river down to tidewater at Nahcotta; total main line mileage, 28.1.

PENNSYLVANIA.—*Brief in Anti-Trust Suit.*—The Pennsylvania Railroad and the Pennsylvania Company have filed their brief with the Interstate Commerce Commission in proceedings instituted by the commission to determine the legality of the purchase of Lehigh Valley and Wabash stock by the Pennsylvania Company in 1928. The brief emphasizes the testimony of General Atterbury and other witnesses that the stock purchases were made "solely for investment," a purpose specifically authorized under the Clayton act. In support of this explanation the following points among others are developed: 1. Evidence fails to support the contention of the commission's Bureau of Inquiry that the purchase of Lehigh Valley and Wabash stock by the Pennsylvania Company may substantially lessen competition between the Pennsylvania Railroad and these competing lines. 2. Stock of the Lehigh Valley and Wabash, purchased "solely for investment," has not been used by voting or otherwise to bring about or attempt to bring about a substantial lessening of competition. 3. The Interstate Commerce Commission's consolidation plan has no bearing upon the controversy over the acquisition of these stocks.

The brief says the Bureau of Inquiry

seeks to construe the law as though it prohibited a mere possibility of the lessening of competition instead of the probability thereof, and in so doing "disregards the decisions of the Supreme Court of the United States.

A construction of the Clayton act which would interpret its provisions as prohibiting a mere possibility of a lessening of competition would render the act unconstitutional, the brief asserts, and adds that such an interpretation is to be avoided.

In arguing that the commission's consolidation plan has no bearing upon the present controversy, it is stated:

"The Clayton act was passed in 1914, whereas it was not until 1920 that the commission was given authority to formulate a plan for the consolidation of the railroads of the country into a limited number of systems; and the Clayton act specifically defines the standards which are to govern the Interstate Commerce Commission in its enforcement of the provisions of that act. These standards do not include—as indeed they could not—anything having relation to the commission's plan for the consolidation of the railroads. Congress has not undertaken to put compulsion back of the plan which it directed the commission to formulate. It is respectfully submitted that the commission is not justified, on its part, in endeavoring by indirection to apply compulsion where Congress has declined to authorize such action."

PORTLAND TERMINAL. — *Notes.* — The Interstate Commerce Commission has authorized this company to issue $1,000,000 of 5 per cent notes maturing one year hence which are authorized for sale at par to Lee, Higginson & Co.

ST. LOUIS SOUTHWESTERN.—*Director.*—Hale Holden, chairman of the executive committee of the Southern Pacific, has applied to the Interstate Commerce Commission for authority to serve as director of the St. L. S. W., of which the Southern Pacific is seeking to acquire control.

ST. LOUIS SOUTHWESTERN.—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume liability for $810,000 of its series K 4½ per cent equipment certificates maturing from 1931 to 1945. The issue is authorized for sale to the highest bidder, Freeman & Co., at 99.344, making the average annual cost to the railroad 4.604 per cent.

ST. LOUIS SOUTHWESTERN.—*Securities.*—The Interstate Commerce Commission has authorized this company to issue from time to time $7,000,000 of four-month 4½ per cent promissory notes and to issue $7,700,000 of first terminal and unifying mortgage bonds to be pledged and repledged as collateral security for these notes.

SOUTHERN PACIFIC.—*Acquisition.*—The Interstate Commerce Commission has assigned this company's application for authority to acquire control of the St. Louis Southwestern for hearing on October 20 at Dallas, Tex., before C. D. Mahaffie, who at the time of the assignment was director of the commission's Bureau of Finance, but who has since been appointed a member of the commission.

TRANS-MISSISSIPPI TERMINAL.—*Valuation.*—The Interstate Commerce Commission has found the final valuation for rate-making purposes of the property owned and used for common-carrier purposes as of 1916 to be $2,140,630. The value of the property used but not owned was placed at $3,662,805.

WESTERN PACIFIC.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $5,000,000 of first mortgage 5 per cent bonds, to reimburse the treasury. It is proposed to sell the bonds at competitive bidding at not less than 97.5 and interest and the Western Pacific Railroad Corporation intends to bid for them.—The Sacramento Northern has applied for authority to issue a note to the Western Pacific for $1,589,120 at 5¼ per cent on account of advances.

Dividends Declared

Buffalo, Rochester & Pittsburgh.—Preferred, 3 per cent, payable August 15 to holders of record August 11.

Cleveland & Pittsburgh.—Guaranteed, $.87½, quarterly; special guaranteed, $.50, quarterly, both payable September 2 to holders of record August 9.

Connecticut & Passumpsic Rivers.—3 per cent, payable August 1 to holders of record July 1.

Massawippi Valley.—3 per cent, payable August 1 to holders of record July 1.

Average Prices of Stocks and of Bonds

	Aug. 5	Last week	Last year
Average price of 20 representative railway stocks.	116.37	116.48	152.24
Average price of 20 representative railway bonds..	94.78	94.64	90.64

* * *

On the Romsdal Valley Line of the Norwegian State Railways

Railway Officers

Executive

W. Frank Knox, receiver and president of the Gulf, Texas & Western, with headquarters at Dallas, Tex., has been elected vice-president of the St. Louis, San Francisco & Texas, of which the former road is now a part, with duties as assigned to him by the president.

The Interstate Commerce Commission has authorized **Herbert Fitzpatrick,** vice-president and general counsel of the Chesapeake & Ohio, with office at Cleveland, Ohio to hold also the position of vice-president—law and corporate relations—of the Missouri Pacific and certain subsidiary and affiliated companies.

Financial, Legal and Accounting

F. J. Schillinger, assistant freight claim agent of the Wabash, has been promoted to freight claim agent, with headquarters as before at St. Louis, Mo., succeeding **L. L. Shepard,** who has been assigned to other duties.

Whitehall W. Coxe, of Norfolk, Va., has been appointed general solicitor of the Norfolk & Western, succeeding **J. Hamilton Chester,** resigned. The legal department, maintained in Philadelphia, Pa., will be moved to Roanoke, Va., when the general office building there is completed.

Clarence W. Egan, general claim agent of the Baltimore & Ohio, who retired from the service of that railroad on August 1, began his railroad career in 1886 as a freight brakeman. Four years later he became civil engineer of right-of-way of the Philadelphia division of the B. & O. In 1893 he was appointed claim agent and in 1905 he was advanced to general claim agent, the position he held until his retirement. During the World War, Mr. Egan was a member of the educational committee of the Maryland Council of Defence and a director of Americanization for the State of Maryland.

George B. Bird, who has been appointed auditor of the Grand Trunk Western, with headquarters at Detroit, Mich., has been in railway service for nearly 31 years, 10 of which have been with the Grand Trunk Western. He was born at Elba, Mich., on February 16, 1874, and after attending high school at Muskegon, Mich., he gained his first railway experience on the Great Northern in December, 1899. From 1905 to 1911 Mr. Bird served successively as voucher and distributor clerk in the office of the auditor of disbursements of the Cincinnati, Hamilton & Dayton, (now part of the Baltimore & Ohio), at Cincinnati, Ohio; paymaster for the

J. G. White Construction Company on railway construction; and traveling auditor and chief clerk to the general auditor of the C., H. & D. He then moved to the Southwest because of illness in his family and was a special accountant for the Atchison, Topeka & Santa Fe at Amarillo, Tex., and a clerk for the Arizona Eastern (now part of the Southern Pacific), at Tuscon, Ariz. In December, 1914, he resumed his former position as chief clerk to the general auditor of the C., H. & D., where he remained until January, 1917, when he was appointed auditor of disbursements of the Pere Marquette at Detroit. From August, 1918, to March, 1920, Mr. Bird was assistant to the federal treasurer of the Pere Marquette and assistant to the federal auditor of the Grand Trunk Western at Detroit. He was then appointed assistant auditor of the G. T. W., a position he continued to occupy although his title was changed to assistant comptroller in June, 1926, and to assistant general auditor in January, 1930.

Operating

W. J. Spangle, assistant trainmaster of the Fort Wayne division of the Pennsylvania, has been appointed special agent on the same division with the same headquarters.

R. Durley, trainmaster of the Alton & Southern and the St. Louis & Ohio River, has been promoted to superintendent of those roads, with headquarters as before at East St. Louis, Ill. **A. L. Lenny,** agent, has been promoted to trainmaster, succeeding Mr. Durley.

Lloyd Lyon, superintendent, auditor and traffic manager of the Pittsburgh, Lisbon & Western, has been appointed general superintendent with jurisdiction over the transportation and maintenance departments and with headquarters as before at Lisbon, Ohio.

I. A. Cleary, trainmaster on the Great Northern at Skykomish, Wash., has been transferred to Seattle, Wash., succeeding **C. A. Manthe** who has been promoted to superintendent of the Klamath Falls division, with headquarters at Klamath Falls, Ore. **S. H. Algyer** has been appointed trainmaster at Skykomish succeeding Mr. Cleary.

A. R. Taylor has been appointed assistant general superintendent of transportation of the Missouri Pacific, with headquarters at St. Louis, Mo. **L. J. Wilkes** has been appointed acting trainmaster of the Wagoner district of the Central division, with headquarters at Van Buren, Ark., succeeding **J. T. Watson,** who has been granted a leave of absence.

J. M. MacArthur, superintendent of the Medicine Hat division of the Canadian Pacific, with headquarters at Medicine Hat, Alta., has been transferred to the Regina division with headquarters at Regina, Sask., succeeding **J. H. Chown** who has been transferred to the Edmonton division with headquarters at Edmonton, Alta. Mr. Chown replaces **G. J. Fox** who has been transferred to the Medicine Hat division, succeeding Mr. MacArthur.

D. E. Rossiter, general superintendent of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Butte, Mont., has been appointed superintendent of the Idaho division and the position of general superintendent at Butte has been abolished. Mr. Rossiter succeeds **N. H. Fuller,** who has been transferred to the northern Montana division, with headquarters at Lewistown, Mont., succeeding **A. C. Bowen,** who has been assigned to other duties. The Olympic division has been combined with the coast division under the jurisdiction of **F. E. Devlin,** superintendent at Tacoma, Wash.

Lawrence A. Podesta, who has been appointed general superintendent of the Indiana Harbor Belt, with headquarters at Gibson, Ind., has been in railroad

Lawrence A. Podesta

service for nearly 38 years. He was born at Chicago on March 17, 1877, and after attending high school in that city obtained his first railway experience as a messenger, at the age of 15 years, for the Chicago Railway Transfer Association (now the Chicago Junction). During the following 25 years he advanced through various positions in the operating department of the Chicago Railway Transfer Association and in 1917 was promoted to superintendent of the Chicago Junction with headquarters at Union Stock Yards, Chicago. Mr. Podesta held this position until his appointment as general superintendent of the Indiana Harbor Belt.

Traffic

W. C. Clark has been appointed assistant traffic manager of the Louisiana & Arkansas Lines, with headquarters at Shreveport, La.

W. I. Lightfoot, general passenger agent of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., has been appointed general passenger agent of the Louisville & Nashville, with headquarters at Louisville, Ky., effective August 15, succeeding **Robert D. Pusey,** deceased.

G. P. Strode has been appointed district freight and passenger agent of the Missouri-Kansas-Texas, with headquarters at Memphis, Tenn.

R. P. Tallman has been appointed assistant to the freight traffic manager of the Gulf Mobile & Northern, with headquarters at Mobile, Ala.

H. T. Coleman, acting manager of mail, baggage and express traffic of the Illinois Central and acting mail traffic manager of the Central of Georgia, has been promoted to manager of mail, baggage and express traffic of the Illinois Central and mail traffic manager of the Central of Georgia, with headquarters as before at Chicago.

R. J. S. Weatherston, general freight agent of the Canadian National, with headquarters at Moncton, N. B., has been appointed general freight and passenger agent of the Atlantic region, with the same headquarters. The position of general passenger agent heretofore occupied by **F. W. Robertson,** who has retired, is abolished. **J. H. Corcoran,** general steamship agent, has been advanced to district passenger agent at Moncton, with jurisdiction in the Province of New Brunswick and the lines comprised in the Atlantic region in the Province of Quebec from Matapedia to Riviere du Loup and Edmundston to Moncton but not including the Gaspe Peninsula.

Following the death of **H. C. Snyder,** assistant freight traffic manager of the Erie, **L. B. Burford,** assistant freight traffic manager has been assigned to the duties formerly handled by Mr. Snyder, with the same title and headquarters. **William H. Stadelman,** general eastern freight agent, has been advanced to the position of assistant freight traffic manager in charge of solicitation, Lines East, covering New York City and off line territory. **E. W. Vail,** assistant general freight agent at Cincinnati, Ohio, has been transferred to New York to succeed Mr. Stadelman as general eastern freight agent. **W. J. Becker,** division freight agent at Scranton, Pa., has resigned to engage in another line of business and **J. A. Ferguson,** coal freight agent at Pittsburgh, Pa., will succeed Mr. Becker. **M. S. Sweeney,** commercial agent at Pittsburgh, has been appointed coal freight agent, with the same headquarters, and **F. W. Fischer** will succeed Mr. Sweeney as commercial agent. **George R. Wheeler** has been advanced to the position of general freight agent in charge of solicitation, Lines East, covering on-line territory.

F. P. Kinney, general freight agent of the New York, New Haven & Hartford, has been appointed freight traffic manager, succeeding **George M. Wood,** retired. **W. J. Landon,** assistant general freight agent and commerce assistant, has been appointed to succeed Mr. Kinney as general freight agent. Both will have headquarters at New Haven, Conn., as before.

Mr. Kinney was born in New Haven

in 1866, and commenced his railway career in the accounting department of the New York, New Haven & Hartford in 1895. He was transferred to the freight department a year later, and

F. P. Kinney

since that time has served in practically every position in that department, starting as a clerk and being promoted through various clerkships to the positions of chief clerk, chief rate clerk and chief of tariff bureau. In 1913, he was transferred to Boston, Mass., and assigned to work of a special nature, returning to New Haven upon his promotion to assistant general freight agent in 1915. It was this position which he held at the time of his present promotion to freight traffic manager.

W. J. Landon, who was also born in New Haven, in 1890, entered railroad service in 1903 as an office boy in the car service department of the New York,

W. J. Landon

New Haven & Hartford. After leaving this position he was employed for a time in the accounting department of the New Haven, serving first as messenger, then as rate clerk and in other clerical posts, and finally as assistant accountant. In 1921 he was transferred to the freight traffic department as chief of the freight rates divisions bureau, continuing in that position until 1924, when he was advanced to assistant general freight agent. Three years later Mr. Landon was appointed assistant general freight agent and commerce assistant, the positions he held at the time of his promotion to general freight agent.

Engineering, Maintenance of Way and Signaling

W. F. McDonald, division engineer of the Spokane division of the Chicago, Milwaukee, St. Paul & Pacific, at Spokane, Wash., has been promoted to assistant engineer, maintenance of way, of the lines west of Mobridge, S. D., succeeding **J. F. Pinson** who has been assigned to other duties.

C. J. Swane, division engineer on the Northern Montana division of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Lewistown, Mont., has been transferred to Milwaukee, Wis., to replace **C. F. Allen,** who has been assigned to other duties. The Northern Montana division has been consolidated with the Rocky Mountain division and **D. C. Rhynsburger,** division engineer of the latter, has had his jurisdiction extended to include the Northern Montana division. **L. R. Boettcher,** division engineer of the Wisconsin Valley division, with headquarters at Wausau, Wis., has been transferred to the Racine & Southwestern division, with headquarters at Beloit, Wis., to replace **C. Holland,** who has been assigned to other duties. The Wisconsin Valley division has been consolidated with the La Crosse division and **G. K. Farner,** division engineer of the latter, with headquarters at Portage, Wis., now has jurisdiction over both divisions. **F. R. King,** formerly division engineer at Portage, Wis., who has been on leave of absence, has been appointed division engineer of the Madison division, with headquarters at Madison, Wis., to succeed **B. V. Burtch,** who has been assigned to other duties.

Obituary

Ernest S. Newton, purchasing agent and storekeeper of the Gulf, Colorado & Santa Fe, with headquarters at Cleburne, Tex., who died on July 23, had been in the service of that road for nearly 41 years. He was born on August 16, 1863, at Birmingham, England, and entered railway service in November, 1889, as a clerk in the freight office of the Gulf, Colorado & Santa Fe at Galveston, Tex. In the following year he was advanced to division storekeeper and in 1906 he was promoted to general storekeeper, with headquarters at Cleburne, after a short period of service as chief clerk to the purchasing agent. Mr. Newton was promoted to purchasing agent in addition to his duties as storekeeper in 1928.

McGonagle, D., M. & N. Head for 21 Years, Dies

William Albert McGonagle, president of the Duluth, Missabe & Northern for the past 21 years and previous to that time an engineering and operating officer of 28 years experience, died at his home at Duluth, Minn., on August 2 from heart disease. Mr. McGonagle had been ill for a week previous to his death, following his participation in an inspection trip to the iron ranges with a party of United States Steel Corporation officers.

In addition to the presidency of the Duluth, Missabe & Northern, he had served as executive head of the Duluth & Iron Range which has been operated as a part of the D., M. & N. since January 10. He had been associated with the movement of iron ore from the range to Lake Superior at Duluth, Minn., and Two Harbors and Superior, Wis., during practically his entire railway career. He was one of the founders of the American Railway Bridge & Building Association, serving as its president in 1895-1896 and maintaining an active interest in its affairs up to the time of his death. As a citizen of Duluth he was particularly active in state and community enterprises.

Mr. McGonagle was born at Conshohocken, Pa., on March 28, 1861, and graduated from high school in that city in 1876. In 1881 he graduated from the University of Pennsylvania with the degree of bachelor of science in engineering, and immediately thereafter was employed as a draftsman in townsite work at Atlantic City, N. J. Later in 1881 he entered railway service as a draftsman on the Northern Pacific at Brainerd, Minn., in the next year being advanced to transitman on location of the Little Falls & Dakota branch of that railroad. After several months he was again advanced to assistant engineer.

From 1882 to 1890 Mr. McGonagle served as an assistant engineer on the

William Albert McGonagle

Duluth & Iron Range, then being promoted to resident engineer and superintendent of bridges and buildings. He became assistant chief engineer of the D. & I. R. in 1901 and in the following year was appointed assistant to the president of the Duluth, Missabe & Northern. In 1903 he was elected first vice-president and general manager, and in 1909 he was elected president of the road. From the latter date until 1918 he also served as general manager of the D., M. & N.